SINAMICS

SINAMICS G120
CU240B/E-2 Control Units

List Manual

Valid for Firmware version
Control units
CU240B-2 4.5
CU240B-2_DP 4.5
CU240E-2 4.5
CU240E-2_DP 4.5
CU240E-2_DP_F 4.5
CU240E-2_F 4.5
CU240E-2_PN 4.5
CU240E-2_PN_F 4.5

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01/2012
Safety Notices

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

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

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

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

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

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

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

Qualified Personnel

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

Proper Use of Siemens Products

Note the following:

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

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# Parameters

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<tr>
<td>1.6 Quick commissioning (p0010 = 1)</td>
<td>1-502</td>
</tr>
</tbody>
</table>
1.1 Introduction to the parameters

1.1.1 Explanation of the parameter list

The layout of the parameter description is as follows (principle):

<table>
<thead>
<tr>
<th>Parameter number</th>
<th>Description</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Unit group</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0068[0...1]</td>
<td>CO: Absolute current actual value / i_act absolute value</td>
<td>3</td>
<td>-</td>
<td>6_2</td>
<td>[Arms]</td>
<td>[Arms]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[Arms]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0700[0...n]</td>
<td>Command source selection / Cmd src sel</td>
<td>1</td>
<td>T</td>
<td>-</td>
<td>0</td>
<td>184</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Parameter number**

Indicates the respective parameter number. The numbers used have four to five digits. Numbers prefixed with an "r" indicate that the parameter is "write-protected" and displays a specific value, but cannot be changed directly by specifying a different value via this parameter number.

All other parameters begin with a "p". The values of these parameters can be changed directly in the range indicated by the "Min" and "Max" settings in the header. If these values have a physical unit, this is shown in the square brackets.

**[Index]** indicates that the parameter is indexed, and which indices are available.

**0...15** indicates that the parameter has several bits that can be evaluated or connected individually.

**CU/PM variants**

Indicates for which Control Units (CU) and/or Power Modules (PM) the parameter is valid. If no CU or PM is listed, then the parameter is valid for all variants.
Parameter text (long name / short name)

Specifies the name of the respective parameter.

Certain parameter names contain the following abbreviated prefixes: BI, BO, CI, CO and BO/CO followed by a colon.

These abbreviations have the following meanings:

- **BI** = Binector input, i.e. the parameter selects the source of a binary signal
- **BO** = Binector output, i.e. the parameter connects as a binary signal
- **CI** = Connector input, i.e. the parameter selects the source of an analog signal
- **CO** = Connector output, i.e. the parameter connects as an analog signal
- **CO/BO** = Connector/binector output, i.e. the parameter connects as an analog signal and/or as a binary signal

To be able to use BICO, you require access to the entire parameter list. At this level many new parameter settings are possible, including the BICO functionality. BICO functionality is a different, more flexible way of setting and combining input and output functions.

The BICO System enables complex functions to be programmed. Boolean and mathematical relationships can be set up between inputs (digital, analog, serial, etc.) and outputs (converter current, frequency, analog output, relay, etc.).

With BI and CI parameters, the parameter number is specified at Factory setting with which the parameter is connected. In this case, the Min and Max values only have dashes.

Access level

Indicates the level of user access. Only a freely accessible access level is effective for the parameters of all CU240B-2 and CU240E-2 Control Units. This covers the parameters using the "Access level 1" to "Access level 3". The parameters of the "Access level 4" are service parameters and password-protected.
**Parameters**  

*Introduction to the parameters*

**Data type**

The available data types are listed in Table 1-1.

<table>
<thead>
<tr>
<th>Character</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned8 (U8)</td>
<td>8-bit without sign</td>
</tr>
<tr>
<td>Unsigned16 (U16)</td>
<td>16-bit without sign</td>
</tr>
<tr>
<td>Unsigned32 (U32)</td>
<td>32-bit without sign</td>
</tr>
<tr>
<td>Integer16 (I16)</td>
<td>16-bit integer</td>
</tr>
<tr>
<td>Integer32 (I32)</td>
<td>32-bit integer</td>
</tr>
<tr>
<td>Floating Point (Float)</td>
<td>Floating-point number</td>
</tr>
</tbody>
</table>

The information on the data type for binector and connector inputs can consist of two specifications (separated by a slash):  
- First specification: Data type of the parameter  
- Second specification: Data type of the signal source preferably be interconnected (binector or connector outputs)

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>
<thead>
<tr>
<th>BICO input 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: Unsigned32</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>CO: Integer16</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: Unsigned32</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>BO: Integer16</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
Scaling

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

Reference values, corresponding to 100%, are required for the display of physical units as percentages. These reference values are entered in parameters p2000 ... p2006.

In addition to p2000 ... p2006, the following scaling is used:

- PERCENT 1.0 = 100%
- 4000H 4000 hex = 100%

Calculated

Specifies whether the parameter is influenced by automatic calculations.

p0340 determines which calculations are to be performed:

- p0340 = 1 includes the calculations from p0340 = 2, 3, 4, 5.
- p0340 = 2 calculates the motor parameters (p0350 ... p0360, p0625).
- p0340 = 3 includes the calculations from p0340 = 4, 5.
- p0340 = 4 only calculates the controller parameters.
- p0340 = 5 only calculates the controller limits.

Note:

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

After p1900 = 1, 2, p0340 = 3 is also called automatically.

Parameters with a reference to p0340 after "Calculated", depend on the Power Module being used and the motor. In this case, the values at "Factory setting" do not correspond to the actual values because these values are calculated during the commissioning. This also applies to the motor parameters.
Parameters

Introduction to the parameters

Can be changed

Converter state in which a parameter can be changed.
Three states are possible:
- Commissioning C(x)
- Operation U
- Ready for operation T

The parameter can be changed in these states. One, two or all states can be specified. If all three states are specified, the parameter setting can be changed in all three converter states.
(x) indicates that the parameter can only be changed when p0010 = x.

Data set

Parameters that belong to data sets are identified as follows:

- **CDS (Command Data Set)**
  They are always indexed with [0 ... n] (with n = 0 ... 3 depending on the setting in p0170).
  - [0] = command data set 0
  - [1] = command data set 1
  etc.

- **DDS (Drive Data Set)**
  They are always indexed with [0 ... n] (with n = 0 ... 3 depending on the setting in p0180).
  - [0] = drive data set 0
  - [1] = drive data set 1
  etc.

- **MDS (Motor Data Set) and PDS (Power Unit Data Set)**
  They are always indexed with [0 ... n] (with n = 0 ... 3 depending on the setting in p0180). The motor data sets and power unit data sets are assigned to the drive data sets, i.e. they are automatically selected with the selection of a drive data set (e.g. drive data set 1 contains motor data set 1 and power unit data set 1).
  Data sets can only created and deleted when p0010 = 15 is set.
Unit group and unit selection

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

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

**Min**
Specifies the lowest value to which the parameter can be set.

**Max**
Specifies the highest value to which the parameter can be set.

**Factory setting**
Specifies the default value, i.e. the value that is valid when the user does not specify a value for the parameter (see also "Calculated").

**Example:**

Unit group: 7_1, unit selection: p0505

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

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

**Table 1-3 Unit group (p0100)**

<table>
<thead>
<tr>
<th>Unit group</th>
<th>Unit selection for p0100 =</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>7_4</td>
<td>1</td>
</tr>
<tr>
<td>14_6</td>
<td>kW</td>
</tr>
<tr>
<td>25_1</td>
<td>kgm²</td>
</tr>
<tr>
<td>27_1</td>
<td>kg</td>
</tr>
<tr>
<td>28_1</td>
<td>Nm/A</td>
</tr>
</tbody>
</table>

**Table 1-4 Unit group (p0505)**

<table>
<thead>
<tr>
<th>Unit group</th>
<th>Unit selection for p0505 =</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>2_1</td>
<td>Hz</td>
</tr>
<tr>
<td>3_1</td>
<td>rpm</td>
</tr>
<tr>
<td>5_1</td>
<td>Vrms</td>
</tr>
<tr>
<td>5_2</td>
<td>V</td>
</tr>
<tr>
<td>5_3</td>
<td>V</td>
</tr>
<tr>
<td>6_2</td>
<td>Arms</td>
</tr>
<tr>
<td>6_5</td>
<td>A</td>
</tr>
</tbody>
</table>
Parameters

Introduction to the parameters

Table 1-4  Unit group (p0505), continued

<table>
<thead>
<tr>
<th>Unit group</th>
<th>Unit selection for p0505 =</th>
<th>Reference variable for %</th>
</tr>
</thead>
<tbody>
<tr>
<td>7_1</td>
<td>Nm % lbf ft %</td>
<td>p2003</td>
</tr>
<tr>
<td>7_2</td>
<td>Nm Nm lbf ft lbf ft</td>
<td>-</td>
</tr>
<tr>
<td>14_5</td>
<td>kW % HP %</td>
<td>r2004</td>
</tr>
<tr>
<td>14_10</td>
<td>kW kW HP HP</td>
<td>-</td>
</tr>
<tr>
<td>21_1</td>
<td>°C °C °F °F</td>
<td>-</td>
</tr>
<tr>
<td>21_2</td>
<td>K K °F °F</td>
<td>-</td>
</tr>
<tr>
<td>39_1</td>
<td>1/s² % 1/s² %</td>
<td>p2007</td>
</tr>
</tbody>
</table>

Table 1-5  Unit group (p0595)

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

Description

Explanation of the function of a parameter

Values

List of the possible values of a parameter.

Recommendation

Information about recommended settings.

Index

The name and meaning of each individual index is specified for indexed parameters, except for parameters that belong to a data set (see "Data set").

Bit array

For parameters with bit arrays, the following information is provided about each bit:
- Bit number and signal name
- Meaning with signal states 0 and 1
- Function diagram (FP) (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.
1.1.2 Number ranges of parameters

Note:
The following number ranges represent an overview for all of the parameters available for the SINAMICS drive family.

The parameters for the product described in this List Manual are described in detail in Section 1.2.

Parameters are grouped into the following number ranges:

Table 1-6 Number ranges for SINAMICS

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

**Introduction to the parameters**

### Table 1-6 Number ranges for SINAMICS, continued

<table>
<thead>
<tr>
<th>Range From</th>
<th>To</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2500</td>
<td>2699</td>
<td>Position control (LR) and basic positioning (EPOS)</td>
</tr>
<tr>
<td>2700</td>
<td>2719</td>
<td>Reference values, display</td>
</tr>
<tr>
<td>2720</td>
<td>2729</td>
<td>Load gear</td>
</tr>
<tr>
<td>2800</td>
<td>2819</td>
<td>Logic operations</td>
</tr>
<tr>
<td>2900</td>
<td>2930</td>
<td>Fixed values (e.g. per cent, torque)</td>
</tr>
<tr>
<td>3000</td>
<td>3099</td>
<td>Motor identification results</td>
</tr>
<tr>
<td>3100</td>
<td>3109</td>
<td>Real time clock (RTC)</td>
</tr>
<tr>
<td>3110</td>
<td>3199</td>
<td>Faults and alarms</td>
</tr>
<tr>
<td>3200</td>
<td>3299</td>
<td>Signals and monitoring</td>
</tr>
<tr>
<td>3400</td>
<td>3659</td>
<td>Infeed control</td>
</tr>
<tr>
<td>3660</td>
<td>3699</td>
<td>Voltage Sensing Module (VSM), Braking Module internal</td>
</tr>
<tr>
<td>3700</td>
<td>3779</td>
<td>Advanced Positioning Control (APC)</td>
</tr>
<tr>
<td>3780</td>
<td>3819</td>
<td>Synchronization</td>
</tr>
<tr>
<td>3820</td>
<td>3849</td>
<td>Friction characteristic</td>
</tr>
<tr>
<td>3850</td>
<td>3899</td>
<td>Functions (e.g. long stator)</td>
</tr>
<tr>
<td>3900</td>
<td>3999</td>
<td>Management</td>
</tr>
<tr>
<td>4000</td>
<td>4599</td>
<td>Terminal Board, Terminal Module (e.g. TB30, TM31)</td>
</tr>
<tr>
<td>4600</td>
<td>4699</td>
<td>Sensor Module</td>
</tr>
<tr>
<td>4700</td>
<td>4799</td>
<td>Trace</td>
</tr>
<tr>
<td>4800</td>
<td>4849</td>
<td>Function generator</td>
</tr>
<tr>
<td>4950</td>
<td>4999</td>
<td>OA application</td>
</tr>
<tr>
<td>5000</td>
<td>5169</td>
<td>Spindle diagnostics</td>
</tr>
<tr>
<td>5400</td>
<td>5499</td>
<td>Line droop control (e.g. shaft generator)</td>
</tr>
<tr>
<td>5500</td>
<td>5599</td>
<td>Dynamic grid support (solar)</td>
</tr>
<tr>
<td>5600</td>
<td>5613</td>
<td>PROFlenergy</td>
</tr>
<tr>
<td>5900</td>
<td>6999</td>
<td>SINAMICS GM/SM/GL/SL</td>
</tr>
<tr>
<td>7000</td>
<td>7499</td>
<td>Parallel connection of power units</td>
</tr>
<tr>
<td>7500</td>
<td>7599</td>
<td>SINAMICS SM120</td>
</tr>
<tr>
<td>7700</td>
<td>7729</td>
<td>External signals</td>
</tr>
<tr>
<td>7770</td>
<td>7789</td>
<td>NVRAM, system parameters</td>
</tr>
<tr>
<td>7800</td>
<td>7839</td>
<td>EEPROM read/write parameters</td>
</tr>
<tr>
<td>7840</td>
<td>8399</td>
<td>Internal system parameters</td>
</tr>
<tr>
<td>8400</td>
<td>8449</td>
<td>Real time clock (RTC)</td>
</tr>
<tr>
<td>8500</td>
<td>8599</td>
<td>Data and macro management</td>
</tr>
<tr>
<td>Range</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>8600</td>
<td>CAN bus</td>
<td></td>
</tr>
<tr>
<td>8800</td>
<td>Communication Board Ethernet (CBE), PROFIdrive</td>
<td></td>
</tr>
<tr>
<td>8900</td>
<td>Industrial Ethernet, PROFINET, CBE20</td>
<td></td>
</tr>
<tr>
<td>9000</td>
<td>Topology</td>
<td></td>
</tr>
<tr>
<td>9300</td>
<td>Safety Integrated</td>
<td></td>
</tr>
<tr>
<td>9400</td>
<td>Parameter consistency and storage</td>
<td></td>
</tr>
<tr>
<td>9500</td>
<td>Safety Integrated</td>
<td></td>
</tr>
<tr>
<td>9900</td>
<td>Topology</td>
<td></td>
</tr>
<tr>
<td>9950</td>
<td>Diagnostics, internal</td>
<td></td>
</tr>
<tr>
<td>10000</td>
<td>Safety Integrated</td>
<td></td>
</tr>
<tr>
<td>11000</td>
<td>Free technology controller 0, 1, 2</td>
<td></td>
</tr>
<tr>
<td>20000</td>
<td>Free function blocks (FBLOCKS)</td>
<td></td>
</tr>
<tr>
<td>21000</td>
<td>Drive Control Chart (DCC)</td>
<td></td>
</tr>
<tr>
<td>50000</td>
<td>SINAMICS DC MASTER (DC control)</td>
<td></td>
</tr>
<tr>
<td>61000</td>
<td>PROFINET</td>
<td></td>
</tr>
</tbody>
</table>
1.2 Parameter list

Product: SINAMICS G120 CU240, Version: 4502400, Language: eng

r0002 Drive operating display / Drv op_display

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-</td>
<td>Integer16</td>
</tr>
</tbody>
</table>

Can be changed: -
Units group: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>200</td>
<td>-</td>
</tr>
</tbody>
</table>

Description:
Operating display for the drive.

Value:
0: Operation - everything enabled
10: Operation - set "enable setpoint" = "1" (p1142)
12: Operation - RFG frozen, set "RFG start" = "1" (p1141)
13: Operation - set "enable RFG" = "1" (p1140)
14: Operation - MotID, excit. running
16: Operation - withdraw braking with OFF1 using "ON/OFF1" = "1"
17: Operation - braking with OFF3 can only be interrupted with OFF2
18: Operation - brake on fault, remove fault, acknowledge
19: Operation - OC braking active (p1230, p1231)
21: Ready for operation - set "Operation enable" = "1" (p0852)
22: Ready for operation - de-magnetizing running (p0347)
31: Ready for switching on - set "ON/OFF1" = "0/1" (p0840)
35: Switching on inhibited - carry out first commissioning (p0010)
41: Switching on inhibited - set "ON/OFF1" = "0" (p0840)
42: Switching on inhibited - set "OC/OFF2" = "1" (p0844, p0845)
43: Switching on inhibited - set "OC/OFF3" = "1" (p0848, p0849)
45: Switching on inhibited - rectify fault, acknowledge fault, STO
46: Switching on inhibited - exit comm mode (p0010)
70: Initialization
200: Wait for booting/partial booting

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
MotID: Motor data identification

p0003 Access level / Acc_level

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>Integer16</td>
</tr>
</tbody>
</table>

Can be changed: C, U, T
Units group: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

Description:
Sets the access level to read and write parameters.

Value:
3: Expert
4: Service

Note:
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).
Parameter list

p0010  Drive commissioning parameter filter / Drv comm. par_filt

CU240B-2  Access level: 1  Calculated: -  Data type: Integer16
CU240B-2_DP  Can be changed: C(1), T  Scaling: -  Data set: -
Units group: -  Unit selection: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>49</td>
<td>1</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
2: Power unit commissioning
3: Motor commissioning
5: Technological application/units
15: Data sets
29: Only Siemens int
30: Parameter reset
39: Only Siemens int
49: Only Siemens int

Dependency:  Refer to: r3996

Notice:  When the parameter is reset to a value of 0, short-term communication interruptions may occur.

Note:  The drive can only be powered up outside the drive commissioning (inverter enable). To realize this, this parameter must be set to 0.

By setting p3900 to a value other than 0, the quick commissioning is completed, and this parameter is automatically reset to 0.

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

Once the Control Unit has been booted up for the first time, the motor parameters suitable for the power unit have been defined, and the control parameters have been calculated accordingly, p0010 is automatically reset to 0.
p0010 = 3 is used for the subsequent commissioning of additional drive data sets (creating data sets: see p0010 = 15).
p0010 = 29, 39, 49: Only for internal Siemens use!

p0010  Drive commissioning parameter filter / Drv comm. par_filt

PM230  Access level: 1  Calculated: -  Data type: Integer16
CU240E-2  Can be changed: C(1), T  Scaling: -  Data set: -
CU240E-2_DP  Units group: -  Unit selection: -
CU240E-2_DP_F
CU240E-2_F
CU240E-2_PN_F
CU240E-2_PN

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>49</td>
<td>1</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
2: Power unit commissioning
3: Motor commissioning
5: Technological application/units
15: Data sets
29: Only Siemens int
30: Parameter reset
39: Only Siemens int
49: Only Siemens int

Dependency:  Refer to: r3996

Notice:  When the parameter is reset to a value of 0, short-term communication interruptions may occur.
Note: The drive can only be powered up outside the drive commissioning (inverter enable). To realize this, this parameter must be set to 0.

By setting p3900 to a value other than 0, the quick commissioning is completed, and this parameter is automatically reset to 0.

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

Once the Control Unit has been booted up for the first time, the motor parameters suitable for the power unit have been defined, and the control parameters have been calculated accordingly, p0010 is automatically reset to 0.

p0010 = 3 is used for the subsequent commissioning of additional drive data sets (creating data sets: see p0010 = 15).

p0010 = 29, 39, 49: Only for internal Siemens use!

### p0010 Drive commissioning parameter filter / Drv comm. par_filt

<table>
<thead>
<tr>
<th>Access level:</th>
<th>1</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(1), T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Value:**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>95</td>
<td>1</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.

**Dependency:** Refer to: r3996

**Notice:** When the parameter is reset to a value of 0, short-term communication interruptions may occur.

**Note:** The drive can only be powered up outside the drive commissioning (inverter enable). To realize this, this parameter must be set to 0.

By setting p3900 to a value other than 0, the quick commissioning is completed, and this parameter is automatically reset to 0.

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

Once the Control Unit has been booted up for the first time, the motor parameters suitable for the power unit have been defined, and the control parameters have been calculated accordingly, p0010 is automatically reset to 0.

p0010 = 3 is used for the subsequent commissioning of additional drive data sets (creating data sets: see p0010 = 15).

p0010 = 29, 39, 49: Only for internal Siemens use!
**p0014  Buffer memory mode / Buf mem mode**

| Access level: | 3 | Calculated: | - |
| Can be changed: | U, T | Scaling: | - |
| Units group: | - | Unit selection: | - |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the mode for the buffer memory.

**Value:**
- 0: Save in a non-volatile fashion (RAM)
- 1: Buffer memory active (non-volatile)
- 2: Clear buffer memory

**Dependency:** If p0014 = 1, changes in the same parameter, as well as in following parameters will not be copied to the buffer memory:
- Refer to: A01066, A01067

**Caution:** For p0014 = 2, entries in the buffer memory are lost and cannot be retrieved.

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

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

Re p0014 = 0:
- Parameter changes are saved in the volatile memory (RAM).
- Non-volatile storage from RAM to ROM is carried out in the following cases:
  - p0971 = 1
  - change from p0014 = 0 to 1
- Re p0014 = 1:
  - With this setting, alarm A01066 followed by alarm A01067 can occur if parameters are continually changed via a fieldbus system.
  - Parameter changes are entered in the volatile memory (RAM) and also in the non-volatile buffer memory.
  - In the following cases, the entries in the buffer memory are transferred into the ROM and then the buffer memory is cleared:
    - p0971 = 1
    - power down/power up the Control Unit
    - change from p0014 = 1 to 0
- Re p0014 = 2:
  - The procedure to clear the entries in the buffer memory is initiated.
  - p0014 is automatically set to 0 after the entries have been cleared.

**p0015  Macro drive unit / Macro drv unit**

| CU240B-2_DP | Access level: | 1 | Calculated: | - |
| CU240E-2_DP | Can be changed: | C, C(1) | Scaling: | - |
| CU240E-2_DP_F | Units group: | - | Unit selection: | - |
| CU240E-2_PN_F |                          |                          |                          |
| CU240E-2 PN |                          |                          |                          |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>999999</td>
<td>7</td>
</tr>
</tbody>
</table>

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

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

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

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

The parameter is not influenced by setting the factory setting.
### p0015  Macro drive unit / Macro drv unit

| CU240B-2  |  |  |
| CU240E-2  |  |  |
| CU240E-2_F|  |  |

**Access level:** 1  
**Calculated:** -  
**Data type:** Unsigned32  
**Can be changed:** C, C(1)  
**Scaling:** -  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>999999</td>
<td>12</td>
</tr>
</tbody>
</table>

**Description:** Runs the corresponding macro files.  
**Caution:** When executing a specific macro, the corresponding programmed settings are made and become active.  
**Notice:** After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.  
**Note:** Macros available as standard are described in the technical documentation of the particular product. The parameter is not influenced by setting the factory setting.

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

|  |  |  |

**Access level:** 3  
**Calculated:** -  
**Data type:** Unsigned32  
**Can be changed:** -  
**Scaling:** -  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4294967295</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the firmware version of the Control Unit.  
**Dependency:** Refer to: r0197, r0198  
**Note:** Example: The value 1010100 should be interpreted as V01.01.01.00.

### r0020  Speed setpoint smoothed / n_set smth

|  |  |  |

**Access level:** 2  
**Calculated:** -  
**Data type:** FloatingPoint32  
**Can be changed:** -  
**Scaling:** p2000  
**Data set:** -  
**Units group:** 3_1  
**Unit selection:** p0505  

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>- [rpm]</td>
<td>- [rpm]</td>
<td>- [rpm]</td>
</tr>
</tbody>
</table>

**Description:** Displays the currently smoothed speed setpoint at the input of the speed controller or U/f characteristic (after the interpolator).  
**Dependency:** Refer to: r0060  
**Note:** Smoothing time constant = 100 ms  
The signal is not suitable as a process quantity and may only be used as a display quantity. The speed setpoint is available smoothed (r0020) and unsmoothed (r0060).

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

|  |  |  |

**Access level:** 2  
**Calculated:** -  
**Data type:** FloatingPoint32  
**Can be changed:** -  
**Scaling:** p2000  
**Data set:** -  
**Units group:** 3_1  
**Unit selection:** p0505  

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>- [rpm]</td>
<td>- [rpm]</td>
<td>- [rpm]</td>
</tr>
</tbody>
</table>

**Description:** Displays the smoothed actual value of the motor speed.  
For U/f control and when slip compensation is deactivated (see p1335), the synchronous speed to the output frequency is shown in r0021.  
**Dependency:** Refer to: r0022, r0063
### Note:
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The speed actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).
For U/f control, the mechanical speed calculated from the output frequency and the slip is shown in r0063[2] even if slip compensation is deactivated.

---

#### r0022
**Speed actual value rpm smoothed / n_act rpm smooth**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>p2000</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>[rpm]</td>
<td>Max</td>
<td>[rpm]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [rpm]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

r0022 is identical to r0021, however, it always has units of rpm and contrary to r0021 cannot be changed over.
For U/f control and when slip compensation is deactivated (see p1335), the synchronous speed to the output frequency is shown in r0022.

**Dependency:**
Refer to: r0021, r0063

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

---

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

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>p2000</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>[Hz]</td>
<td>Max</td>
<td>[Hz]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [Hz]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the smoothed converter frequency.

**Dependency:**
Refer to: r0066

**Note:**
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The output frequency is available smoothed (r0024) and unsmoothed (r0066).

---

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

<table>
<thead>
<tr>
<th>Access level:</th>
<th>2</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>p2001</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>[Vrms]</td>
<td>Max</td>
<td>[Vrms]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [Vrms]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the smoothed output voltage of the power unit.

**Dependency:**
Refer to: r0072

**Note:**
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The output voltage is available smoothed (r0025) and unsmoothed (r0072).
## Parameters

### Parameter list

#### r0026 DC link voltage smoothed / Vdc smooth

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>2</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>- [V]</td>
</tr>
<tr>
<td>Max</td>
<td>- [V]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [V]</td>
</tr>
</tbody>
</table>

**Description:**
Displays the smoothed actual value of the DC link voltage.

**Dependency:**
Refer to: r0070

**Notice:**
When measuring a DC link voltage < 200 V, for the Power Module (e.g. PM240) a valid measured value is not supplied. In this case, when an external 24 V power supply is connected, a value of approx. 24 V is displayed in the display parameter.

**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 DC link voltage is available smoothed (r0026) and unsmoothed (r0070).

r0026 sets itself to the lower value of the pulsating DC link voltage.

#### r0027 Absolute actual current smoothed / I_act abs smth

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>2</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Max</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [Arms]</td>
</tr>
</tbody>
</table>

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

**Dependency:**
Refer to: r0068

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

**Note:**
Smoothing time constant = 300 ms

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

The absolute current actual value is available smoothed (r0027) and unsmoothed (r0068).

#### r0028 Modulation depth smoothed / Mod_depth smth

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>4</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>- [%]</td>
</tr>
<tr>
<td>Max</td>
<td>- [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

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

**Dependency:**
Refer to: r0074

**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 modulation depth is available smoothed (r0028) and unsmoothed (r0074).

#### r0029 Current actual value field-generating smoothed / Id_act smooth

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>4</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Max</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [Arms]</td>
</tr>
</tbody>
</table>

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

**Dependency:**
Refer to: r0076
### Parameter list

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

#### r0030 Current actual value torque-generating smoothed / Iq_act_smooth

**Access level:** 4  
**Calculated:** -  
**Data type:** FloatingPoint32  
**Can be changed:** -  
**Scaling:** p2002  
**Units group:** -  
**Unit selection:** -  
**Min:** -  
**Max:** -  
**Factory setting:** -

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

**Dependency:** Refer to: r0078

**Note:** Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The torque-generating current actual value is available smoothed (r0030) and unsmoothed (r0078).

#### r0031 Actual torque smoothed / M_act_smooth

**Access level:** 2  
**Calculated:** -  
**Data type:** FloatingPoint32  
**Can be changed:** -  
**Scaling:** p2003  
**Units group:** 7_1  
**Unit selection:** p0505  
**Min:** -  
**Max:** -  
**Factory setting:** -

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

**Dependency:** Refer to: r0080

**Note:** Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The active current actual value is available smoothed (r0031) and unsmoothed (r0080).

#### r0032 CO: Active power actual value smoothed / P_actv_act_smth

**Access level:** 2  
**Calculated:** -  
**Data type:** FloatingPoint32  
**Can be changed:** -  
**Scaling:** r2004  
**Units group:** 14_10  
**Unit selection:** p0505  
**Min:** -  
**Max:** -  
**Factory setting:** -

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

**Dependency:** Refer to: r0082

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

**Note:** Power delivered at the motor shaft.
The active power is available smoothed (r0032 with 100 ms) and unsmoothed (r0082).

#### r0033 Torque utilization smoothed / M_util_smooth

**Access level:** 4  
**Calculated:** -  
**Data type:** FloatingPoint32  
**Can be changed:** -  
**Scaling:** PERCENT  
**Units group:** -  
**Unit selection:** -  
**Min:** -  
**Max:** -  
**Factory setting:** -

**Description:** Displays the smoothed torque utilization as a percentage.
The torque utilization is obtained from the required smoothed torque in reference to the torque limit, scaled using p2196.

**Dependency:** This parameter is only available for vector control. For U/f control r0033 = 0 %.
### Parameters

#### Parameter list

**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 utilization is available smoothed (r0033) and unsmoothed (r0081).

For M_set total (r0079) > 0, the following applies:
- Required torque = M_set total
- Actual torque limit = M_max upper effective (r1538)

For M_set total (r0079) <= 0, the following applies:
- Required torque = - M_set total
- Actual torque limit = - M_max lower effective (r1539)

For the actual torque limit = 0, the following applies:
- r0033 = 100 %
- r0033 = 0 %

#### r0034 CO: Motor utilization / Motor utilization

<table>
<thead>
<tr>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: PERCENT</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

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

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

- For motor temperature model 1 (I2t) (p0612.0 = 1), the following applies:
  - r0034 = (motor model temperature - 40 K) / (p0605 - 40 K) * 100 %
- For motor temperature model 3 (p0612.2 = 1), the following applies:
  - r0034 = (motor model temperature - p0613) / (p5390 - p0613) * 100 %

Refer to:
- p0611, p0612, p0615

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

**Note:**
- Smoothing time constant = 100 ms
- The signal is not suitable as a process quantity and may only be used as a display quantity.
- For r0034 = -200.0 %, the following applies:
  - The value is invalid (e.g. the motor temperature model is not activated or has been incorrectly parameterized).

#### r0035 CO: Motor temperature / Mot temp

<table>
<thead>
<tr>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: p2006</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: 21_1</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the actual temperature in the motor.

**Note:**
- For r0035 not equal to -200.0 °C, the following applies:
  - this temperature display is valid.
  - a KTY sensor is connected.
  - for induction motors, the thermal motor model is activated (p0601 = 0).
- For r0035 equal to -200.0 °C, the following applies:
  - this temperature display is not valid (temperature sensor error).
  - A PTC sensor or bimetallic NC contact is connected.
  - for synchronous motors, the thermal motor model is activated (p0601 = 0).
### Description:
Displays the smoothed actual power factor. This refers to the electrical power of the basic fundamental signals at the converter output terminals.

### Index:

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Inverter, maximum value</td>
</tr>
<tr>
<td>1</td>
<td>Depletion layer maximum value</td>
</tr>
<tr>
<td>2</td>
<td>Rectifier maximum value</td>
</tr>
<tr>
<td>3</td>
<td>Air intake</td>
</tr>
<tr>
<td>4</td>
<td>Interior of power unit</td>
</tr>
<tr>
<td>5</td>
<td>Inverter 1</td>
</tr>
<tr>
<td>6</td>
<td>Inverter 2</td>
</tr>
<tr>
<td>7...10</td>
<td>Reserved</td>
</tr>
<tr>
<td>11</td>
<td>Rectifier 1</td>
</tr>
<tr>
<td>12</td>
<td>Reserved</td>
</tr>
<tr>
<td>13</td>
<td>Depletion layer 1</td>
</tr>
<tr>
<td>14</td>
<td>Depletion layer 2</td>
</tr>
<tr>
<td>15</td>
<td>Depletion layer 3</td>
</tr>
<tr>
<td>16</td>
<td>Depletion layer 4</td>
</tr>
<tr>
<td>17</td>
<td>Depletion layer 5</td>
</tr>
<tr>
<td>18</td>
<td>Depletion layer 6</td>
</tr>
<tr>
<td>19</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

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

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

The maximum value is the temperature of the hottest inverter, depletion layer, or rectifier. r0037[2,3,6,11,14...18] is only relevant for chassis power units.
Parameters
Parameter list

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

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

r0039[0...2] Energy display / Energy display
Access level: 2 Calculated: - Data type: FloatingPoint32
Can be changed: - Scaling: - Data set: -
Units group: - Unit selection: -

Min: - [kWh] Max: - [kWh] Factory setting: - [kWh]

Description: Displays the energy values at the output terminals of the power unit.
Index: [0] = Energy balance (sum)
       [1] = Energy drawn
Dependency: Refer to: p0040
Note: Re index 0:
       Sum of the energy drawn and energy that is fed back.

p0040 Reset energy consumption display / Energy usage reset
Access level: 3 Calculated: - Data type: Unsigned8
Can be changed: U, T Scaling: - Data set: -
Units group: - Unit selection: -

Min: 0 Max: 1 Factory setting: 0

Description: Setting to reset the display in r0039 and r0041.
Procedure:
Set p0040 = 0 --> 1
The displays are reset and the parameter is automatically set to zero.
Dependency: Refer to: r0039

r0041 Energy consumption saved / Energy cons saved
Access level: 2 Calculated: - Data type: FloatingPoint32
Can be changed: - Scaling: - Data set: -
Units group: - Unit selection: -

Min: - [kWh] Max: - [kWh] Factory setting: - [kWh]

Description: Displays the saved energy referred to 100 operating hours.
Dependency: Refer to: p0040
Note: This display is used for a fluid-flow machine.
The flow characteristic is entered into p3320 ... p3329.
For an operating time of below 100 hours, the display is interpolated up to 100 hours.

p0045 Display values smoothing time constant / Disp_val T_smooth
Access level: 3 Calculated: - Data type: FloatingPoint32
Can be changed: U, T Scaling: - Data set: -
Units group: - Unit selection: -

Min: 0.00 [ms] Max: 10000.00 [ms] Factory setting: 4.00 [ms]

Description: Sets the smoothing time constant for the following display values:
r0063[1], r0068[1], r0080[1], r0082[1].
Description: Displays missing enable signals that are preventing the closed-loop drive control from being commissioned.

Dependency: Refer to: r0002

Note: The value r0046 = 0 indicates that all enable signals for this drive are present.

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

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

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

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

Bit 04 = 1 (DC braking enable missing) when:
- the signal source in p1230 has a 1 signal

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

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

Bit 12 = 1 (enable signal missing), if:
- the signal source in p1142 is a 0 signal.

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

Bit 17 = 1 (enable signal missing), if:
- commissioning mode is selected (p0010 > 0).
- there is an OFF2 fault response.
- the drive is not operational.
Bit 18 = 1 (enable signal missing), if:
- OFF3 has still not been completed or an OFF3 fault response is present.

Bit 19 = 1 (internal pulse enable missing), if:
- sequence control does not have a finished message.

Bit 20 = 1 (internal DC brake active), if:
- the drive is not in the state "Operation" or in "OFF1/3".
- the internal pulse enable is missing (r0046.19 = 0).

Bit 21 = 1 (enable signal missing), if:
- the power unit does not issue an enable signal (e.g. because DC link voltage is too low).
- the holding brake opening time (p1216) has still not expired.
- hibernation is active.

Bit 26 = 1 (enable signal missing), if:
- the drive is not operational.

Bit 27 = 1 (enable signal missing), if:
- de-magnetization not completed.

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

Bit 30 = 1 (speed controller inhibited), if one of the following reasons is present:
- the pole position identification is active.
- motor data identification is active (only certain steps).

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

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

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>Scaling:</td>
<td>Data set:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>300</td>
<td>-</td>
</tr>
</tbody>
</table>

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

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

**Note:**
Re r0047 = 300:
This value is also displayed if encoder calibration p1990 is selected.
### Description:
Displays the effective Command Data Set (CDS).

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

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r0050.0...1</strong></td>
<td><strong>CO/BO: Command Data Set CDS effective / CDS effective</strong></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Displays the effective Command Data Set (CDS).</td>
</tr>
<tr>
<td><strong>Bit field:</strong></td>
<td>Bit name</td>
</tr>
<tr>
<td>00</td>
<td>CDS eff., bit 0</td>
</tr>
<tr>
<td>01</td>
<td>CDS eff., bit 1</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p0810, p0811, r0836</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>When selecting the motor data identification routine and the rotating measurement, the drive data set changeover is suppressed.</td>
</tr>
</tbody>
</table>

<p>| <strong>r0051.0...1</strong> | <strong>CO/BO: Drive Data Set DDS effective / DDS effective</strong> |
| Access level: 2 | Calculated: - | Data type: Unsigned8 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - | |</p>
<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Displays the effective Drive Data Set (DDS).</td>
<td></td>
</tr>
<tr>
<td><strong>Bit field:</strong></td>
<td>Bit name</td>
<td>1 signal</td>
</tr>
<tr>
<td>00</td>
<td>DDS eff., bit 0</td>
<td>ON</td>
</tr>
<tr>
<td>01</td>
<td>DDS eff., bit 1</td>
<td>ON</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p0820, p0821, r0837</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>When selecting the motor data identification routine and the rotating measurement, the drive data set changeover is suppressed.</td>
<td></td>
</tr>
</tbody>
</table>

<p>| <strong>r0052.0...15</strong> | <strong>CO/BO: Status word 1 / ZSW 1</strong> |
| Access level: 2 | Calculated: - | Data type: Unsigned16 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - | |</p>
<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Displays status word 1.</td>
<td></td>
</tr>
<tr>
<td><strong>Bit field:</strong></td>
<td>Bit name</td>
<td>1 signal</td>
</tr>
<tr>
<td>00</td>
<td>Rdy for switch on</td>
<td>Yes</td>
</tr>
<tr>
<td>01</td>
<td>Ready</td>
<td>Yes</td>
</tr>
<tr>
<td>02</td>
<td>Operation enabled</td>
<td>Yes</td>
</tr>
<tr>
<td>03</td>
<td>Fault present</td>
<td>Yes</td>
</tr>
<tr>
<td>04</td>
<td>Coast down active (OFF2)</td>
<td>No</td>
</tr>
<tr>
<td>05</td>
<td>Quick Stop active (OFF3)</td>
<td>No</td>
</tr>
<tr>
<td>06</td>
<td>Switching on inhibited active</td>
<td>Yes</td>
</tr>
<tr>
<td>07</td>
<td>Alarm present</td>
<td>Yes</td>
</tr>
<tr>
<td>08</td>
<td>Deviation, setpoint/actual speed</td>
<td>No</td>
</tr>
<tr>
<td>09</td>
<td>Control request</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>Maximum speed reached</td>
<td>Yes</td>
</tr>
<tr>
<td>11</td>
<td>I, M, P limit reached</td>
<td>No</td>
</tr>
<tr>
<td>12</td>
<td>Motor holding brake open</td>
<td>Yes</td>
</tr>
<tr>
<td>13</td>
<td>Alarm motor overtemperature</td>
<td>No</td>
</tr>
<tr>
<td>14</td>
<td>Motor rotates forwards</td>
<td>Yes</td>
</tr>
<tr>
<td>15</td>
<td>Alarm drive converter overload</td>
<td>No</td>
</tr>
</tbody>
</table>

**Caution:** p2080 is used to define the signal sources of the PROFIdrive status word interconnection.
Note: The following status bits are displayed in r0052.

Bit 00: r0899 Bit 0
Bit 01: r0899 Bit 1
Bit 02: r0899 Bit 2
Bit 03: r2139 Bit 3 (or r1214 Bit 10, if p1210 > 0)
Bit 04: r0899 Bit 4
Bit 05: r0899 Bit 5
Bit 06: r0899 Bit 6
Bit 07: r2139 Bit 7
Bit 08: r2197 Bit 7
Bit 09: r0899 Bit 7
Bit 10: r2197 Bit 6
Bit 11: r0056 Bit 13 (negated)
Bit 12: r0899 Bit 12
Bit 13: r2135 Bit 14 (negated)
Bit 14: r2197 Bit 3
Bit 15: r2135 Bit 15 (negated)

**r0053.0...11**

**CO/BO: Status word 2 / ZSW 2**

- **Access level:** 2
- **Calculated:** -
- **Data type:** Unsigned16
- **Can be changed:** -
- **Scaling:** -
- **Units group:** -
- **Data set:** -
- **Min:** -
- **Max:** -
- **Factory setting:** -

**Description:** Displays status word 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>DC braking active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>(</td>
<td>n_{act}</td>
<td>&gt; p_{1226} (n_{standstill}))</td>
<td>Yes</td>
</tr>
<tr>
<td>02</td>
<td>(</td>
<td>n_{act}</td>
<td>&gt; p_{1080} (n_{min}))</td>
<td>Yes</td>
</tr>
<tr>
<td>03</td>
<td>l_{act} &gt;= p_{2170}</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>(</td>
<td>n_{act}</td>
<td>&gt; p_{2155})</td>
<td>Yes</td>
</tr>
<tr>
<td>05</td>
<td>(</td>
<td>n_{act}</td>
<td>&lt;= p_{2155})</td>
<td>Yes</td>
</tr>
<tr>
<td>06</td>
<td>(</td>
<td>n_{act}</td>
<td>&gt;= r_{1119} (n_{set}))</td>
<td>Yes</td>
</tr>
<tr>
<td>07</td>
<td>Vdc &lt;= p_{2172}</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Vdc &gt; p_{2172}</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Ramp-up/ramp-down completed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Technology controller output at the lower limit</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Technology controller output at the upper limit</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Caution:** p2081 is used to define the signal sources of the PROFIdrive status word interconnection.

**Note:** The following status bits are displayed in r0053:

Bit 00: r1239 Bit 8
Bit 01: r2197 Bit 5 (negated)
Bit 02: r2197 Bit 0 (negated)
Bit 03: r2197 Bit 8
Bit 04: r2197 Bit 2
Bit 05: r2197 Bit 1
Bit 06: r2197 Bit 4
Bit 07: r2197 Bit 9
Bit 08: r2197 Bit 10
Bit 09: r1199 Bit 2 (negated)
Bit 10: r2349 Bit 10
Bit 11: r2349 Bit 11
**r0054.0...15**  
**CO/BO: Control word 1 / STW 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>ON/OFF1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>OC / OFF2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>OC / OFF3</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Operation enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Ramp-function generator enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Continue ramp-function generator</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Speed setpoint enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Acknowledge fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Jog bit 0</td>
<td>Yes</td>
<td>No</td>
<td>3030</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Jog bit 1</td>
<td>Yes</td>
<td>No</td>
<td>3030</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Master ctrl by PLC</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Direction reversal (setpoint)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Motorized potentiometer raise</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Motorized potentiometer lower</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>CDS bit 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**  
The following control bits are displayed in r0054:  
Bit 00: r0898 Bit 0  
Bit 01: r0898 Bit 1  
Bit 02: r0898 Bit 2  
Bit 03: r0898 Bit 3  
Bit 04: r0898 Bit 4  
Bit 05: r0898 Bit 5  
Bit 06: r0898 Bit 6  
Bit 07: r2138 Bit 7  
Bit 08: r0898 Bit 8  
Bit 09: r0898 Bit 9  
Bit 10: r0898 Bit 10  
Bit 11: r1198 Bit 11  
Bit 13: r1198 Bit 13  
Bit 14: r1198 Bit 14  
Bit 15: r0836 Bit 0  
Re bit 10:  
If p0700 = 2 is set, bit 10 always shows "1".

**r0055.0...15**  
**CO/BO: Supplementary control word / Suppl STW**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Fixed setp bit 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Fixed setp bit 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Fixed setp bit 2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Fixed setp bit 3</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**  
Displays supplementary control word.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Initialization completed</td>
<td>3</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
<tr>
<td>01</td>
<td>De-magnetizing completed</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Pulse enable present</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Soft starting present</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Magnetizing completed</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Voltage boost when starting</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Acceleration voltage</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Frequency negative</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Field weakening active</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Voltage limit active</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Slip limit active</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Frequency limit active</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Current limiting controller voltage output active</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Current/torque limiting</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Vdc_max controller active</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Vdc_min controller active</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**

The following control bits are displayed in r0055:

- Bit 00: r1198 Bit 0
- Bit 01: r1198 Bit 1
- Bit 02: r1198 Bit 2
- Bit 03: r1198 Bit 3
- Bit 04: r0837 Bit 0
- Bit 05: r0837 Bit 1
- Bit 08: r2349 Bit 0 (negated)
- Bit 09: r1239 Bit 11
- Bit 11: r1406 Bit 11
- Bit 12: r1406 Bit 12
- Bit 13: r2138 Bit 13 (negated)
- Bit 15: r0836 Bit 1

**r0056.0...15**

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

**PM230**

- Access level: 3
- Calculated: -
- Data type: Unsigned16

**PM240**

- Can be changed: -
- Scaling: -
- Data set: -

**Units group:**

<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 status word of the closed-loop 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>Initialization completed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>De-magnetizing completed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Pulse enable present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Soft starting present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Magnetizing completed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Voltage boost when starting</td>
<td>Active</td>
<td>Inactive</td>
<td>6300</td>
</tr>
<tr>
<td>06</td>
<td>Acceleration voltage</td>
<td>Active</td>
<td>Inactive</td>
<td>6300</td>
</tr>
<tr>
<td>07</td>
<td>Frequency negative</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Field weakening active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Voltage limit active</td>
<td>Yes</td>
<td>No</td>
<td>6714</td>
</tr>
<tr>
<td>10</td>
<td>Slip limit active</td>
<td>Yes</td>
<td>No</td>
<td>6310</td>
</tr>
<tr>
<td>11</td>
<td>Frequency limit active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Current limiting controller voltage output active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Current/torque limiting</td>
<td>Active</td>
<td>Inactive</td>
<td>6060</td>
</tr>
<tr>
<td>14</td>
<td>Vdc_max controller active</td>
<td>Yes</td>
<td>No</td>
<td>6220, 6320</td>
</tr>
<tr>
<td>15</td>
<td>Vdc_min controller active</td>
<td>Yes</td>
<td>No</td>
<td>6220, 6320</td>
</tr>
</tbody>
</table>
### Parameter list

**r0056.0...13**  
**CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl**

- **PM250**  
  - Access level: 3  
  - Calculated: -  
  - Data type: Unsigned16  
  - Can be changed: -  
  - Scaling: -  
  - Data set: -

- **PM260**  
  - Access level: 3  
  - Calculated: -  
  - Data type: Unsigned16  
  - Can be changed: -  
  - Scaling: -  
  - Data set: -

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Initialization completed</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>De-magnetizing completed</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Pulse enable present</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Soft starting present</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Magnetizing completed</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Voltage boost when starting</td>
<td>Active</td>
<td>Inactive</td>
<td>6300</td>
</tr>
<tr>
<td>06</td>
<td>Acceleration voltage</td>
<td>Active</td>
<td>Inactive</td>
<td>6300</td>
</tr>
<tr>
<td>07</td>
<td>Frequency negative</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Field weakening active</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Voltage limit active</td>
<td>Yes</td>
<td>No</td>
<td>6714</td>
</tr>
<tr>
<td>10</td>
<td>Slip limit active</td>
<td>Yes</td>
<td>No</td>
<td>6310</td>
</tr>
<tr>
<td>11</td>
<td>Frequency limit active</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Current limiting controller voltage output active</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Current/torque limiting</td>
<td>Active</td>
<td>Inactive</td>
<td>6060</td>
</tr>
</tbody>
</table>

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

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

- Access level: 3  
  - Calculated: -  
  - Data type: FloatingPoint32  
  - Can be changed: -  
  - Scaling: p2000  
  - Data set: -

<table>
<thead>
<tr>
<th>Units group: 3_1</th>
<th>Unit selection: p0505</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min [-rpm]</td>
<td>Max [-rpm]</td>
</tr>
<tr>
<td></td>
<td>Factory setting [-rpm]</td>
</tr>
</tbody>
</table>

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

**Dependency:** Refer to: r0020

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

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

- Access level: 3  
  - Calculated: -  
  - Data type: FloatingPoint32  
  - Can be changed: -  
  - Scaling: p2000  
  - Data set: -

<table>
<thead>
<tr>
<th>Units group: 3_1</th>
<th>Unit selection: p0505</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min [-rpm]</td>
<td>Max [-rpm]</td>
</tr>
</tbody>
</table>

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

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

- Access level: 3  
  - Calculated: -  
  - Data type: FloatingPoint32  
  - Can be changed: -  
  - Scaling: p2000  
  - Data set: -

<table>
<thead>
<tr>
<th>Units group: 3_1</th>
<th>Unit selection: p0505</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min [-rpm]</td>
<td>Max [-rpm]</td>
</tr>
</tbody>
</table>

**Description:** Displays the actual speed of the closed-loop speed control and the U/f control.

For U/f control and when slip compensation is deactivated (see p1335), the synchronous speed to the output frequency is shown in r0063[0].
Index: |
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[0] = Unsmoothed</td>
</tr>
<tr>
<td>[1] = Smoothed with p0045</td>
</tr>
<tr>
<td>[2] = Calculated from f_set - f_slip</td>
</tr>
</tbody>
</table>

Dependency: |
| Refer to: r0021, r0022 |

Note: |
| The speed actual value r0063[0] is additionally displayed - smoothed with p0045 - in r0063[1]. |
| The speed (r0063[2]) calculated from the output frequency and slip can only be compared with the speed actual value (r0063[0]) in the steady-state. |

**r0064 CO: Speed controller system deviation / n_ctrl system dev**

Access level: 3 |
Calculated: - |
Data type: FloatingPoint32 |
Can be changed: - |
Scaling: p2000 |
Data set: - |
Units group: 3_1 |
Unit selection: p0505 |

Min - [rpm] |
Max - [rpm] |
Factory setting - [rpm] |

Description: Displays the actual system deviation of the speed controller.

**r0065 Slip frequency / f_Slip**

Access level: 3 |
Calculated: - |
Data type: FloatingPoint32 |
Can be changed: - |
Scaling: p2000 |
Data set: - |
Units group: 2_1 |
Unit selection: p0505 |

Min - [Hz] |
Max - [Hz] |
Factory setting - [Hz] |

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

**r0066 CO: Output frequency / f_outp**

Access level: 3 |
Calculated: - |
Data type: FloatingPoint32 |
Can be changed: - |
Scaling: p2000 |
Data set: - |
Units group: 2_1 |
Unit selection: p0505 |

Min - [Hz] |
Max - [Hz] |
Factory setting - [Hz] |

Description: Displays the output frequency of the power unit.

Dependency: Refer to: r0024

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

**r0067 CO: Output current, maximum / I_outp max**

Access level: 3 |
Calculated: - |
Data type: FloatingPoint32 |
Can be changed: - |
Scaling: p2002 |
Data set: - |
Units group: 6_2 |
Unit selection: p0505 |

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

Description: Displays the maximum output current of the power unit.

Dependency: The maximum output current is determined by the parameterized current limit and the motor and converter thermal protection. Refer to: p0290, p0640

**r0068[0...1] CO: Absolute current actual value / I_act abs val**

Access level: 3 |
Calculated: - |
Data type: FloatingPoint32 |
Can be changed: - |
Scaling: p2002 |
Data set: - |
Units group: 6_2 |
Unit selection: p0505 |

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

Description: Displays actual absolute current.
Index: [0] = Unsmoothed
[1] = Smoothed with p0045

Dependency:
Refer to: r0027

Notice:
The value is updated with the current controller sampling time.

Note:
Absolute current value = sqrt(Iq^2 + Id^2)
The absolute value of the current actual value is available smoothed (r0027 with 300 ms, r0068[1] with p0045) and unsmoothed (r0068[0]).

### r0069[0...6]
**CO: Phase current actual value / I_phase act value**

<table>
<thead>
<tr>
<th>Access level: 4</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: p2002</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: 6_5</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the measured actual phase currents as peak value.

**Index:**
[0] = Phase U
[1] = Phase V
[2] = Phase W
[3] = Phase U offset
[4] = Phase V offset
[5] = Phase W offset

**Note:**
In indices 3 ... 5, the offset currents of the 3 phases, which are added to correct the phase currents, are displayed.
The sum of the 3 corrected phase currents is displayed in index 6.

### r0070
**CO: Actual DC link voltage / Vdc act val**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: p2001</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: 5_2</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the measured actual value of the DC link voltage.

**Dependency:**
Refer to: r0026

**Notice:**
When measuring a DC link voltage < 200 V, for the Power Module (e.g. PM240) a valid measured value is not supplied. In this case, when an external 24 V power supply is connected, a value of approx. 24 V is displayed in the display parameter.

**Note:**
The DC link voltage is available smoothed (r0026) and unsmoothed (r0070).

### r0071
**Maximum output voltage / U_output max**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: p2001</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: 5_1</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the maximum output voltage.

**Dependency:**
The maximum output voltage depends on the actual DC link voltage (r0070) and the maximum modulation depth (p1803).

**Note:**
As the (driven) motor load increases, the maximum output voltage drops as a result of the reduction in DC link voltage.
### r0072 Parameter: Output voltage / U_output

**Access level:** 3  
**Can be changed:** -  
**Units group:** 5_1  
**Min:** - [Vrms]  
**Max:** - [Vrms]

**Description:** Displays the actual output voltage of the power unit.

**Dependency:** Refer to: r0025

**Note:** The output voltage is available smoothed (r0025) and unsmoothed (r0072).

#### Parameters:
- **Calculated:** -  
- **Data type:** FloatingPoint32  
- **Scaling:** p2001  
- **Unit selection:** p0505  
- **Factory setting:** - [Vrms]

#### Access levels:
- **Access level:** 3

#### Calculated:
- **Min:** -  
- **Max:** -

#### Data type:
- **Data type:** FloatingPoint32

#### Scaling:
- **Scaling:** p2001

#### Unit selection:
- **Unit selection:** p0505

#### Factory setting:
- **Factory setting:** - [Vrms]

#### Units group:
- **Units group:** 5_1

#### Unit selection:
- **Unit selection:** p0505

#### Min Max Factory setting
- **Min:** - [Vrms]  
- **Max:** - [Vrms]  
- **Factory setting:** - [Vrms]  

### r0073 Parameter: Maximum modulation depth / Modulat_depth max

**Access level:** 4  
**Can be changed:** -  
**Units group:** -  
**Min:** - [%]  
**Max:** - [%]

**Description:** Displays the maximum modulation depth.

**Dependency:** Refer to: p1803

#### Parameters:
- **Calculated:** -  
- **Data type:** FloatingPoint32  
- **Scaling:** PERCENT  
- **Unit selection:** -

#### Access levels:
- **Access level:** 4

#### Calculated:
- **Min:** -  
- **Max:** -

#### Data type:
- **Data type:** FloatingPoint32

#### Scaling:
- **Scaling:** PERCENT

#### Unit selection:
- **Unit selection:** -

#### Factory setting:
- **Factory setting:** - [%]

#### Units group:
- **Units group:** -

#### Unit selection:
- **Unit selection:** -

#### Min Max Factory setting
- **Min:** - [%]  
- **Max:** - [%]  
- **Factory setting:** - [%]  

### r0074 Parameter: Modulation depth / Modulat_depth

**Access level:** 4  
**Can be changed:** -  
**Units group:** -  
**Min:** - [%]  
**Max:** - [%]

**Description:** Displays the actual modulation depth.

**Dependency:** Refer to: r0028

**Note:** For space vector modulation, 100% corresponds to the maximum output voltage without overcontrol. Values above 100% indicate an overcontrol condition - values below 100% have no overcontrol. The phase voltage (phase-to-phase, rms) is calculated as follows: \( \frac{\text{r0074} \times \text{r0070}}{\sqrt{2} \times 100\%} \). The modulation depth is available smoothed (r0028) and unsmoothed (r0074).

#### Parameters:
- **Calculated:** -  
- **Data type:** FloatingPoint32  
- **Scaling:** PERCENT  
- **Unit selection:** -

#### Access levels:
- **Access level:** 4

#### Calculated:
- **Min:** -  
- **Max:** -

#### Data type:
- **Data type:** FloatingPoint32

#### Scaling:
- **Scaling:** PERCENT

#### Unit selection:
- **Unit selection:** -

#### Factory setting:
- **Factory setting:** - [%]

#### Units group:
- **Units group:** -

#### Unit selection:
- **Unit selection:** -

#### Min Max Factory setting
- **Min:** - [%]  
- **Max:** - [%]  
- **Factory setting:** - [%]  

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

**Access level:** 3  
**Can be changed:** -  
**Units group:** 6_2  
**Min:** - [Arms]  
**Max:** - [Arms]

**Description:** Displays the field-generating current setpoint (Id_set).

**Dependency:** Refer to: r0028

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

#### Parameters:
- **Calculated:** -  
- **Data type:** FloatingPoint32  
- **Scaling:** p2002  
- **Unit selection:** p0505  
- **Factory setting:** - [Arms]

#### Access levels:
- **Access level:** 3

#### Calculated:
- **Min:** -  
- **Max:** -

#### Data type:
- **Data type:** FloatingPoint32

#### Scaling:
- **Scaling:** p2002

#### Unit selection:
- **Unit selection:** p0505

#### Factory setting:
- **Factory setting:** - [Arms]

#### Units group:
- **Units group:** 6_2

#### Unit selection:
- **Unit selection:** p0505

#### Min Max Factory setting
- **Min:** - [Arms]  
- **Max:** - [Arms]  
- **Factory setting:** - [Arms]  

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

**Access level:** 3  
**Can be changed:** -  
**Units group:** 6_2  
**Min:** - [Arms]  
**Max:** - [Arms]

**Description:** Displays the field-generating current actual value (Id_act).

**Dependency:** Refer to: r0029

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

#### Parameters:
- **Calculated:** -  
- **Data type:** FloatingPoint32  
- **Scaling:** p2002  
- **Unit selection:** p0505  
- **Factory setting:** - [Arms]

#### Access levels:
- **Access level:** 3

#### Calculated:
- **Min:** -  
- **Max:** -

#### Data type:
- **Data type:** FloatingPoint32

#### Scaling:
- **Scaling:** p2002

#### Unit selection:
- **Unit selection:** p0505

#### Factory setting:
- **Factory setting:** - [Arms]

#### Units group:
- **Units group:** 6_2

#### Unit selection:
- **Unit selection:** p0505

#### Min Max Factory setting
- **Min:** - [Arms]  
- **Max:** - [Arms]  
- **Factory setting:** - [Arms]
The field-generating current actual value is available smoothed (r0029) and unsmoothed (r0076).

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

- **Access level:** 3
- **Can be changed:** -
- **Units group:** 6_2
- **Min:** - [Arms]
- **Max:** - [Arms]
- **Description:** Displays the torque/force generating current setpoint.
- **Note:** This value is irrelevant for the U/f control mode.

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

- **Access level:** 3
- **Can be changed:** -
- **Units group:** 6_2
- **Min:** - [Arms]
- **Max:** - [Arms]
- **Dependency:** Refer to: r0030
- **Description:** Displays the torque-generating current actual value (Iq_act).
- **Note:** This value is irrelevant for the U/f control mode.

**CO: Torque setpoint / M_set total**

- **Access level:** 3
- **Can be changed:** -
- **Units group:** 7_1
- **Min:** - [Nm]
- **Max:** - [Nm]
- **Description:** Displays the torque setpoint at the output of the speed controller.

**CO: Torque actual value / M_act**

- **Access level:** 4
- **Can be changed:** -
- **Units group:** 7_1
- **Min:** - [Nm]
- **Max:** - [Nm]
- **Dependency:** Refer to: r0031
- **Note:** The torque actual value is available smoothed (r0031 with 100 ms, r0080[1] with p0045) and unsmoothed (r0080[0]).

**CO: Torque utilization / M_Utilization**

- **Access level:** 4
- **Can be changed:** -
- **Units group:** -
- **Min:** - [%]
- **Max:** - [%]
- **Description:** Displays the torque utilization as a percentage.
- **Note:** The torque utilization is obtained from the required smoothed torque referred to the torque limit.
### Dependency:
This parameter is only available for vector control. For U/f control \( r0081 = 0 \% \).
Refer to: \( r0033 \)

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

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

| Access level | 4 | Calculated: | - |
| Can be changed: | - | Scaling: | r2004 |
| Units group: | 14_5 | Unit selection: | p0505 |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>[kW]</td>
<td>[kW]</td>
</tr>
</tbody>
</table>

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

**Index:**
[0] = Unsmoothed
[1] = Smoothed with p0045
[2] = Electric power

**Dependency:**
Refer to: \( r0032 \)

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

### r0083
**CO: Flux setpoint / Flex setp**

| Access level | 4 | Calculated: | - |
| Can be changed: | - | Scaling: | PERCENT |
| Units group: | - | Unit selection: | - |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>[%]</td>
<td>[%]</td>
</tr>
</tbody>
</table>

**Description:**
Displays the flux setpoint.

### r0084[0...1]
**CO: Flux actual value / Flux act val**

| Access level | 4 | Calculated: | - |
| Can be changed: | - | Scaling: | PERCENT |
| Units group: | - | Unit selection: | - |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>[%]</td>
<td>[%]</td>
</tr>
</tbody>
</table>

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

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

### r0087
**CO: Actual power factor / Cos phi act**

| Access level | 3 | Calculated: | - |
| Can be changed: | - | Scaling: | - |
| Units group: | - | Unit selection: | - |

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

**Description:**
Displays the actual active power factor.
This value refers to the electrical power of the basic fundamental signals at the output terminals of the converter.
### Parameters

#### Parameter list

**r0089[0...2] Actual phase voltage / U_phase act val**

| Access level: | 4 |
| Can be changed: | - |
| Units group: | 5_3 |
| Calculated: | - |
| Scaling: | p2001 |
| Data type: | FloatingPoint32 |
| Data set: | - |

**Description:** Displays the actual phase voltage.

**Index:**

- [0] = Phase U
- [1] = Phase V
- [2] = Phase W

**Note:** The values are determined from the transistor power-on duration.

**Index:** [r0089][0...2]

**Units group:** 5_3

**Unit selection:** p0505

**Min** - [V]

**Max** - [V]

**Factory setting**

**r0094 CO: Transformation angle / Transformat_angle**

| Access level: | 3 |
| Can be changed: | - |
| Units group: | - |
| Calculated: | - |
| Scaling: | p2005 |
| Data type: | FloatingPoint32 |
| Data set: | - |

**Description:** Displays the transformation angle.

**Dependency:** Refer to: r1778

**Note:** The transformation angle corresponds to the electrical commutation angle.

**Index:** [r0094]

**Units group:**

**Unit selection:**

**Min** - [']

**Max** - [']

**Factory setting**

**p0100 IEC/NEMA mot stds / IEC/NEMA mot stds**

| Access level: | 1 |
| Can be changed: | C(1) |
| Units group: | - |
| Calculated: | - |
| Scaling: | - |
| Data type: | Integer16 |
| Data set: | - |

**Description:** Defines whether the motor and drive converter power settings (e.g. rated motor power, p0307) are expressed in [kW] or [hp].

Depending on the selection, the rated motor frequency (p0310) is either set to 50 Hz or 60 Hz.

For p0100 = 0, 2, the following applies: The power factor (p0308) should be parameterized.

For p0100 = 1, the following applies: The efficiency (p0309) should be parameterized.

**Value:**

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

**Dependency:** If p0100 is changed, all of the rated motor parameters are reset. Only then are possible unit changeovers made.

The units of all motor parameters are changed that are involved in the selection of IEC or NEMA (e.g. r0206, p0307, r0333, r0334, p0341, p0344, r1969).

Refer to: r0206, p0210, p0300, p0304, p0305, p0307, p0308, p0309, p0310, p0311, p0314, p0320, p0322, p0323, p0335, r0337, p1800

**Note:** The parameter value is not reset when the factory setting is restored (p0010 = 30, p0970).

**Index:** [p0100]

**Units group:**

**Unit selection:**

**Min** 0

**Max** 2

**Factory setting** 0

**p0124[0...n] CU detection via LED / CU detection LED**

| Access level: | 3 |
| Can be changed: | U, T |
| Units group: | - |
| Calculated: | - |
| Scaling: | - |
| Data type: | Unsigned8 |
| Data set: | PDS |

**Description:** Identification of the Control Unit using an LED.

**Note:** While p0124 = 1, the READY LED flashes green/orange or red/orange with 2 Hz at the appropriate Control Unit.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p0170</strong></td>
<td><strong>Number of Command Data Sets (CDS) / CDS count</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 2</td>
<td>Calculated: -</td>
<td>Data type: Unsigned8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed: C(15)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p0180</strong></td>
<td><strong>Number of Drive Data Sets (DDS) / DDS count</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Unsigned8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed: C(15)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r0197</strong></td>
<td><strong>Bootloader vers / Bootloader vers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 4</td>
<td>Calculated: -</td>
<td>Data type: Unsigned32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r0198[0...1]</strong></td>
<td><strong>BIOS/EEPROM data version / BIOS/EEPROM vers</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 4</td>
<td>Calculated: -</td>
<td>Data type: Unsigned32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The value 1010100 should be interpreted as V01.01.01.00.
### Drive object name / DO name

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Freely assignable name for a drive object.</td>
</tr>
<tr>
<td>Note</td>
<td>The parameter is not influenced by setting the factory setting.</td>
</tr>
</tbody>
</table>

### Power unit code number actual / PU code no. act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the unique code number of the power unit.</td>
</tr>
<tr>
<td>Note</td>
<td>r0200 = 0: No power unit data found</td>
</tr>
</tbody>
</table>

### Power unit code number / PU code no

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Sets the actual code number from r0200 to acknowledge the power unit being used.</td>
</tr>
<tr>
<td>Note</td>
<td>The parameter is used to identify when the drive is being commissioned for the first time. The power unit commissioning can only be exited (p0201 = r0200), if the actual and acknowledged code numbers are identical (p0010 = 2). When the code number is changed, the connection voltage (p0210) is checked and, if necessary, adjusted.</td>
</tr>
</tbody>
</table>

### Actual power unit type / PU actual type

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Displays the type of power unit found.</td>
</tr>
</tbody>
</table>
**Parameters**

**Parameter list**

114: PM240 (SINAMICS G120)
115: PM250 (SINAMICS G120 / S120)
116: PM260 (SINAMICS G120)
118: SINAMICS G120 Px
120: PM340 (SINAMICS S120)
130: PM250D (SINAMICS G120D)
133: SINAMICS G120C
150: SINAMICS G
151: PM330 (SINAMICS G120)
200: SINAMICS GM
250: SINAMICS SM
260: SINAMICS MC
300: SINAMICS GL
350: SINAMICS SL
400: SINAMICS DCM

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

**r0204[0...n]**

<table>
<thead>
<tr>
<th>Power unit hardware properties / PU HW property</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong> 3</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> -</td>
</tr>
<tr>
<td><strong>Units group:</strong> -</td>
</tr>
<tr>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Scaling:</strong> -</td>
</tr>
<tr>
<td><strong>Units selection:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
</tr>
<tr>
<td><strong>Data set:</strong> PDS</td>
</tr>
</tbody>
</table>

**Description:** Displays the properties supported by the power unit hardware.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name 1</th>
<th>Signal name 0</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>RFI filter available</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>07</td>
<td>F3E regenerative feedback into the line supply</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>08</td>
<td>Internal Braking Module</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>12</td>
<td>Safe Brake Control (SBC) supported</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>13</td>
<td>Safety Integrated supported</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>14</td>
<td>Internal LC output filter</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**p0205**

<table>
<thead>
<tr>
<th>Power unit application / PU application</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong> 1</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> C(1, 2)</td>
</tr>
<tr>
<td><strong>Units group:</strong> -</td>
</tr>
<tr>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Scaling:</strong> -</td>
</tr>
<tr>
<td><strong>Units selection:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong> Integer16</td>
</tr>
<tr>
<td><strong>Data set:</strong> -</td>
</tr>
</tbody>
</table>

**Description:** The duty cycles can be overloaded provided that the drive converter is operated with its base load current before and after the overload. This is based on a load duty cycle of 300 s.

**Value:**

- 0: Load duty cycle with high overload for vector drives
- 1: Load duty cycle with low overload for vector drives

**Dependency:** Refer to: r3996

**Notice:** The parameter value is not reset when the factory setting is restored (see p0010 = 30, p0970).

**Note:** When the power unit use is changed, short-term communication interruptions may occur.

When the parameter is changed, all of the motor parameters (p0305 ... p0311), the technological application (p0500) and the control mode (p1300) are pre-assigned according to the selected application. The parameter has no influence when calculating the thermal overload.

p0205 can only be changed to the settings that are saved in the power unit EEPROM.
### Parameters

#### Parameter list

<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>p0205</td>
<td>Power unit application / PU application</td>
<td>The duty cycles can be overloaded provided that the drive converter is operated with its base load current before and after the overload. This is based on a load duty cycle of 300 s.</td>
<td>Refer to: r3996</td>
<td>The parameter value is not reset when the factory setting is restored (see p0010 = 30, p0970). When the power unit use is changed, short-term communication interruptions may occur.</td>
<td>When the parameter is changed, all of the motor parameters (p0305 ... p0311), the technological application (p0500) and the control mode (p1300) are pre-assigned according to the selected application. The parameter has no influence when calculating the thermal overload. p0205 can only be changed to the settings that are saved in the power unit EEPROM.</td>
</tr>
</tbody>
</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>r0206[0...4]</td>
<td>Rated power unit power / PU P_rated</td>
<td>Displays the rated power unit power for various load duty cycles.</td>
<td>IECdrives (p0100 = 0): Units kW NEMA drives (p0100 = 1): Units hp</td>
<td>Refer to: p0100, p0205</td>
<td></td>
</tr>
</tbody>
</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>r0207[0...4]</td>
<td>Rated power unit current / PU P_I_rated</td>
<td>Displays the rated power unit power for various load duty cycles.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### r0208  Rated power unit line supply voltage / PU U\_rated

| Access level: | 2 | Calculated: | - | Data type: FloatingPoint32 |
| Can be changed: | - | Scaling: | - | Data set: - |
| Units group: | - | Unit selection: | - | |
| Min | - [Vrms] | Max | - [Vrms] | Factory setting | - [Vrms] |

**Description:**
Displays the rated line supply voltage of the power unit.

- r0208 = 400 : 380 - 480 V +/-10 %
- r0208 = 500 : 500 - 600 V +/-10 %
- r0208 = 690 : 660 - 690 V +/-10 %

### r0209[0...4]  Power unit, maximum current / PU I\_max

| Access level: | 3 | Calculated: | - | Data type: FloatingPoint32 |
| Can be changed: | - | Scaling: | - | Data set: - |
| Units group: | - | Unit selection: | - | |
| Min | - [Arms] | Max | - [Arms] | Factory setting | - [Arms] |

**Description:**
Displays the maximum output current of the power unit.

**Index:**

- [0] = Catalog
- [1] = Load duty cycle with low overload
- [2] = Load duty cycle with high overload
- [3] = Reserved
- [4] = Reserved

**Dependency:**
Refer to: p0205

### p0210  Drive unit line supply voltage / V\_connect

| Access level: | 3 | Calculated: | - | Data type: Unsigned16 |
| Can be changed: | C(2), T | Scaling: | - | Data set: - |
| Units group: | - | Unit selection: | - | |
| Min | 1 [V] | Max | 63000 [V] | Factory setting | 400 [V] |

**Description:**
Sets the drive unit supply voltage (rms value of the phase-to-phase line supply voltage).

**Dependency:**
Set p1254, p1294 (automatic detection of the Vdc switch-on levels) = 0.
The switch-in thresholds of the Vdc_max controller are then directly determined using p0210.

**Warning:**
In the case of regenerative power units (PM250, PM260), the regenerative power limit for U/f control current limitation control is calculated as a proportion of the supply voltage p0210. Therefore, p0210 should not be set to a value higher than the actual line voltage.

**Caution:**
If the line supply voltage is higher than the entered value, the Vdc controller may be automatically de-activated in some cases to prevent the motor from accelerating. In this case, an appropriate alarm is output.

**Note:**
Setting ranges for p0210 as a function of the rated power unit voltage:

- \( U_{\text{rated}} = 230 \text{ V} \):
  - p0210 = 200 ... 240 V
- \( U_{\text{rated}} = 400 \text{ V} \):
  - p0210 = 380 ... 480 V
- \( U_{\text{rated}} = 500 \text{ V} \):
  - p0210 = 500 ... 600 V
- \( U_{\text{rated}} = 690 \text{ V} \):
  - p0210 = 660 ... 690 V

The pre-charging switch-in threshold for the DC link voltage (Vdc) is calculated from p0210:

\[
Vdc_{\text{pre}} = p0210 \times 0.82 \times 1.35
\]
The undervoltage thresholds for the DC link voltage (Vdc) are calculated from p0210 as a function of the rated power unit voltage:

- \( U_{\text{rated}} = 400 \text{ V} \):
  \[- U_{\text{min}} = p0210 \cdot 0.78 > 360 \text{ V} \]

- \( U_{\text{rated}} = 500 \text{ V} \):
  \[- U_{\text{min}} = p0210 \cdot 0.76 \]

- \( U_{\text{rated}} = 690 \text{ V} \):
  \[- U_{\text{min}} = p0210 \cdot 0.74 > 450 \text{ V} \]

### p0219 Braking power of the braking resistor / \( P_{w_{\text{brake}}} \)

<table>
<thead>
<tr>
<th>PM240</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Can be changed: C(1, 2), T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: 14_6</td>
<td>Unit selection: p0100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [kW]</td>
<td>20000.00 [kW]</td>
<td>0.00 [kW]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Braking power of the connected braking resistor.

**Dependency:** Refer to: p1127, p1240, p1280, p1531

**Note:**
If a braking power is entered into the parameter, then the following calculations are performed:
- p1240, p1280 the Vdc,max control is deactivated.
- p1531 = - p0219 the power limit when generating is set (limited to - p1530).
- The minimum ramp-down time is calculated (p1127) depending on p0341, p0342 and p1082
  - If the parameter is reset again to zero, then the Vdc,max controller is reactivated and the power limit as well as the ramp-down time are recalculated.

### p0230 Drive filter type, motor side / Drv filt type mot

<table>
<thead>
<tr>
<th>Access level: 1</th>
<th>Calculated: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C(1, 2)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the type of the filter at the motor side.

**Value:**
- 0: No filter
- 1: Motor reactor
- 2: dv/dt filter
- 3: Sine-wave filter, Siemens
- 4: Sine-wave filter, third-party

**Dependency:**
- The following parameters are influenced using p0230:
  - p0230 = 1:
    - \( p0233 \) (power unit, motor reactor) = filter inductance
  - \( p0230 = 3 \):
    - \( p0233 \) (power unit, motor reactor) = filter inductance
    - \( p0234 \) (power unit sine-wave filter capacitance) = filter capacitance
  - \( p0290 \) (power unit overload response) = inhibit pulse frequency reduction
  - \( p1082 \) (maximum speed) = Fmax filter / pole pair number
  - \( p1800 \) (pulse frequency) >= nominal pulse frequency of the filter
  - \( p1802 \) (modulator modes) = space vector modulation without overcontrol
  - \( p0230 = 4 \):
    - \( p0290 \) (power unit overload response) = inhibit pulse frequency reduction
    - \( p1802 \) (modulator modes) = space vector modulation without overcontrol
- The user must set the following parameters according to the data sheet of the sine-wave filter and also the user must check whether they are permitted.
  - \( p0233 \) (power unit, motor reactor) = filter inductance
  - \( p0234 \) (power unit sine-wave filter capacitance) = filter capacitance
Parameters

Parameter list

--> p1082 (maximum speed) = Fmax filter / pole pair number
--> p1800 (pulse frequency) => nominal pulse frequency of the filter
Refer to: p0233, p0234, p0290, p1082, p1800, p1802

Note:
The parameter cannot be changed if the power unit (e.g. PM260) is equipped with an internal sine-wave filter.
if a filter type cannot be selected, then this filter type is not permitted for the Motor Module.
p0230 = 1:
Power units with output reactor are limited to output frequencies of 150 Hz.
p0230 = 3:
Power units with sine-wave filter are limited to output frequencies of 200 Hz.

<table>
<thead>
<tr>
<th>r0231[0...1]</th>
<th>Power cable length, maximum / Cable length max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>- [m]</td>
<td>- [m]</td>
</tr>
</tbody>
</table>

Description:
Displays the maximum permissible cable lengths between the drive unit and motor.

Index:
[0] = Unshielded
[1] = Shielded

Note:
The display value is used to provide information for service and maintenance.

<table>
<thead>
<tr>
<th>p0233</th>
<th>Power unit motor reactor / PU mot reactor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level: 2</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: C(2), U, T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.000 [mH]</td>
<td>1000.000 [mH]</td>
</tr>
</tbody>
</table>

Description:
Enter the inductance of a filter connected at the power unit output.

Dependency:
This parameter is automatically pre-set when you select a filter via p0230 if a SIEMENS filter is defined for the power unit.
Refer to: p0230

Note:
When exiting the quick commissioning using p3900 = 1, the parameter value is set to the value of the defined SIEMENS filter or to zero. For this reason, the parameter value of a third-party filter only has to be entered outside the commissioning phase (p0010 = 0) and then the controller calculation (p0340 = 3) is carried out.
The parameter cannot be changed if the power unit (e.g. PM260) is equipped with an internal sine-wave filter.

<table>
<thead>
<tr>
<th>p0234</th>
<th>Power unit sine-wave filter capacitance / PU sine filter C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level: 2</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: C(2), U, T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.000 [µF]</td>
<td>1000.000 [µF]</td>
</tr>
</tbody>
</table>

Description:
Enters the capacitance of a sine-wave filter connected at the power unit output.

Dependency:
This parameter is automatically pre-set when you select a filter via p0230 if a SIEMENS filter is defined for the power unit.
Refer to: p0230

Note:
The parameter value includes the sum of all of the capacitances of a phase connected in series (phase - ground).
When exiting the quick commissioning using p3900 = 1, the parameter value is set to the value of the defined SIEMENS filter or to zero. For this reason, the parameter value of a third-party filter only has to be entered outside the commissioning phase (p0010 = 0).
The parameter cannot be changed if the power unit (e.g. PM260) is equipped with an internal sine-wave filter.
### r0238  Internal power unit resistance / PU R internal

| Description | Displays the internal resistance of the power unit (IGBT and line resistance). |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Min</td>
<td>- [ohm]</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Max</td>
<td>- [ohm]</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [ohm]</td>
<td></td>
</tr>
</tbody>
</table>

### p0278  DC link voltage undervoltage threshold reduction / Vdc U_under red

| Description | Sets the absolute value by which the threshold to initiate the undervoltage fault (F30003) is reduced. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Can be changed</td>
<td>T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Min</td>
<td>-80 [V]</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Max</td>
<td>0 [V]</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0 [V]</td>
<td></td>
</tr>
</tbody>
</table>

### Notice: When using a Control Supply Module (CSM) for 24 V supply from the DC link, the minimum continuous DC link voltage may not lie below 430 V. DC link voltages in the range 300 ... 430 V are permissible up to a duration of 1 min. For chassis power units, this parameter has no significance.

### Note: The resulting shutdown threshold can be read in r0296 and is dependent on the selected rated voltage (p0210) and the power unit being used.

### p0287[0...1]  Ground fault monitoring thresholds / Gnd flt threshold

| Description | Sets the shutdown thresholds for the ground fault monitoring. The setting is made as a percentage of the maximum power unit current (r0209). |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Can be changed</td>
<td>T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [%]</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Max</td>
<td>100.0 [%]</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Factory setting</td>
<td>[0] 6.0 [%]</td>
<td>[1] 16.0 [%]</td>
</tr>
</tbody>
</table>

### Index:

- [0] = Threshold at which pre-charging starts
- [1] = Threshold at which pre-charging stops

### Dependency: Refer to: p1901

### Reference: F30003

### Note: This parameter is only relevant for chassis power units.

### r0289  CO: Maximum power unit output current / PU I_outp max

| Description | Displays the actual maximum output current of the power unit taking into account derating factors. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Min</td>
<td>- [Arms]</td>
<td>Scaling: p2002</td>
</tr>
<tr>
<td>Max</td>
<td>- [Arms]</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [Arms]</td>
<td></td>
</tr>
</tbody>
</table>

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1-49
Parameters

Parameter list

p0290  Power unit overload response / PU overld response

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the response to a thermal overload condition of the power unit.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value:</td>
<td>0: Reduce output current or output frequency</td>
</tr>
<tr>
<td></td>
<td>1: No reduction, shutdown when overload threshold is reached</td>
</tr>
<tr>
<td></td>
<td>2: Reduce I_output or f_output and f_pulse (not using I2t)</td>
</tr>
<tr>
<td></td>
<td>3: Reduce the pulse frequency (not using I2t)</td>
</tr>
</tbody>
</table>

Dependency: If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only responses can be selected without pulse frequency reduction (p0290 = 0, 1). If a fault or alarm is present, then r2135.13 or r2135.15 is set. Refer to: r0036, r0037, p0290, r2135 Refer to: A05000, A05001, A07805

Caution: If the thermal overload of the power unit is not sufficiently reduced by the actions taken, the drive is always shut down. This means that the power unit is always protected irrespective of the setting of this parameter.

Note: The setting p0290 = 0, 2 is only practical if the load decreases with decreasing speed (e.g. for applications with variable torque such as for pumps and fans). Under overload conditions, the current and torque limit are reduced, and therefore the motor is braked and forbidden speed ranges (e.g. minimum speed p1080 and suppression [skip] speeds p1091 ... p1094) can be passed through. For p0290 = 2, 3, the I2t overload detection of the power unit does not influence the responses. When the motor data identification routine is selected, p0290 cannot be changed.

p0292[0...1]  Power unit temperature alarm threshold / PU T_alrm thresh

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the alarm threshold for power unit overtemperatures. The value is set as a difference to the tripping (shutdown) temperature.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive:</td>
<td>If this threshold is exceeded, an overload alarm is generated and the system responds as parameterized in p0290. Infeed: When the threshold value is exceeded, only an overload alarm is output.</td>
</tr>
</tbody>
</table>

Index: [0] = Heat sink temperature  [1] = Power semiconductor (chip) temperature

Dependency: Refer to: r0037, p0290 Refer to: A05000
p0294  Power unit alarm with I2t overload / PU I2t alrm thresh

Access level:  4  
Can be changed: U, T  
Units group: -  
Min:  10.0 [%]  
Max:  100.0 [%]  
Factory setting:  95.0 [%]  

Description: Sets the alarm threshold for the I2t power unit overload.
If this threshold is exceeded, an overload alarm is generated and the system responds as parameterized in p0290.

Dependency: Refer to: r0036, p0290
Refer to: A07805

Note: The I2t fault threshold is 100 %. If this value is exceeded, fault F30005 is output.

p0295  Fan run-on time / Fan run-on time

Access level:  3  
Can be changed: U, T  
Units group: -  
Min:  0 [s]  
Max:  600 [s]  
Factory setting:  0 [s]  

Description: Sets the fan run-on time after the pulses for the power unit have been canceled.
- Under certain circumstances, the fan can continue to run for longer than was set (e.g. as a result of the excessively high heat sink temperature).
- For values less than 1 s, a 1 s run on time for the fan is active.
- for a PM230 power unit, sizes D - F the parameter is ineffective.

r0296  DC link voltage undervoltage threshold / Vdc U_lower_thresh

Access level:  3  
Can be changed: -  
Units group: -  
Min:  - [V]  
Max:  - [V]  
Factory setting:  - [V]  

Description: If the DC link voltage falls below this threshold, the power unit is shut down due to a DC link undervoltage condition (F30003).

Dependency: Refer to: p0278
Refer to: F30003

r0297  DC link voltage overvoltage threshold / Vdc U_upper_thresh

Access level:  3  
Can be changed: -  
Units group: -  
Min:  - [V]  
Max:  - [V]  
Factory setting:  - [V]  

Description: If the DC link voltage exceeds the threshold specified here, the drive unit is tripped due to DC link overvoltage.

Dependency: Refer to: F30002
## Parameters

### Parameter list

**p0300[0...n]**  
**Motor type selection / Mot type sel**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>2</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(1, 3)</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>MDS</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>204</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**

Selecting the motor type.

The first digit of the parameter value always defines the general motor type and corresponds to the third-party motor belonging to a motor list:

1 = Rotating induction motor  
2 = Rotating synchronous motor

The type information must be entered to filter motor-specific parameters and to optimize the operating characteristics and behavior. For example, for synchronous motors, power factor (p0308) is neither used nor displayed (in the BOP/IOP).

**Value:**

- 0: No motor
- 1: Induction motor (rotating)
- 2: Synchronous motor (rotating, permanent-magnet)
- 10: 1LE1 standard induction motor
- 13: 1LG6 standard induction motor
- 17: 1LA7 standard induction motor
- 19: 1LA9 standard induction motor
- 204: 1LE4 synchronous motor

**Dependency:**

When selecting a motor type from the 1LA7 series, parameters p0335, p0626, p0627, and p0628 of the thermal motor model are pre-assigned as a function of p0307 and p0311.

**Note:**

Once the Control Unit has been powered up for the first time or if the factory settings have been defined accordingly, the motor type is pre-configured to induction motor (p0300 = 1).

If a motor type has not been selected (p0300 = 0), then the drive commissioning routine cannot be exited.

**p0301[0...n]**  
**Motor code number selection / Mot code No. sel**

<table>
<thead>
<tr>
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<td>MDS</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**

The parameter is used to select a motor from a motor parameter list.

When changing the code number (with the exception to the value 0), all of the motor parameters are pre-assigned from the internally available parameter lists.

**Dependency:**

Code numbers can only be selected for motor types that correspond to the motor type selected in p0300.

Refer to: p0300

**Note:**

The motor code number can only be changed if the matching catalog motor was first selected in p0300.

When selecting a catalog motor (p0300 >= 100), drive commissioning can only be exited if a code number is selected.

**Caution:**

When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**p0304[0...n]**  
**Rated motor voltage / Mot U_rated**

<table>
<thead>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 [Vrms]</td>
<td>20000 [Vrms]</td>
<td>0 [Vrms]</td>
</tr>
</tbody>
</table>

**Description:**

Sets the rated motor voltage (rating plate).

**Caution:**

When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.
Note: When the parameter value is entered the connection type of the motor (star-delta) must be taken into account. Once the Control Unit has booted for the first time or if the factory settings have been restored, the parameter is pre-assigned to match the power unit.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Caution</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0305[0...n]</td>
<td>Rated motor current / Mot I_rated</td>
<td>When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.</td>
<td>If p0305 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is pre-assigned accordingly.</td>
<td>When the parameter value is entered the connection type of the motor (star-delta) must be taken into account. Once the Control Unit has booted for the first time or if the factory settings have been restored, the parameter is pre-assigned to match the power unit.</td>
</tr>
<tr>
<td>p0306[0...n]</td>
<td>Number of motors connected in parallel / Motor qty</td>
<td>The motors to be connected in parallel must be of the same type and size (same order no. (MLFB)). The mounting regulations when connecting motors in parallel must be carefully maintained! The number of motors set must correspond to the number of motors that are actually connected in parallel. After changing p0306, it is imperative that the control parameters are adapted (e.g. using automatic calculation with p0340 = 1, p3900 &gt; 0). For synchronous motors connected in parallel with p1300 &gt;= 20, be following applies: - the individual motors must be mechanically coupled with one another and the EMF must be aligned to one another. For induction motors that are connected in parallel, but which are not mechanically coupled with one another, then the following applies: - an individual motor must not be loaded beyond its stall point.</td>
<td>If p0306 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is appropriately pre-assigned.</td>
<td>Only operation with U/f characteristic makes sense if more than 10 identical motors are connected in parallel.</td>
</tr>
</tbody>
</table>
## Parameters

### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Caution</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p0307[0...n]</strong></td>
<td>Rated motor power / Mot P_rated</td>
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<tr>
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<td>Unit selection: p0100</td>
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<tr>
<td>Min 0.00 [kW]</td>
<td>Max 100000.00 [kW]</td>
<td>Factory setting 0.00 [kW]</td>
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<td></td>
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<tr>
<td><strong>p0308[0...n]</strong></td>
<td>Rated motor power factor / Mot cos_phi_rated</td>
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<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min 0.000</td>
<td>Max 1.000</td>
<td>Factory setting 0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p0309[0...n]</strong></td>
<td>Rated motor efficiency / Mot eta_rated</td>
<td></td>
<td></td>
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<td>Can be changed: C(1, 3)</td>
<td>Scaling: -</td>
<td>Data set: MDS</td>
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<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min 0.0 [%]</td>
<td>Max 99.9 [%]</td>
<td>Factory setting 0.0 [%]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p0310[0...n]</strong></td>
<td>Rated motor frequency / Mot f_rated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 1</td>
<td>Calculated: -</td>
<td>Data type: FloatingPoint32</td>
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<td></td>
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<tr>
<td>Can be changed: C(1, 3)</td>
<td>Scaling: -</td>
<td>Data set: MDS</td>
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</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min 0.00 [Hz]</td>
<td>Max 650.00 [Hz]</td>
<td>Factory setting 0.00 [Hz]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dependency: The number of pole pairs (r0313) is automatically re-calculated when the parameter is changed (together with p0311), if p0314 = 0.
The rated frequency is restricted to values between 1.00 Hz and 650.00 Hz.
Refer to: p0311, r0313, p0314

Caution: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Notice: If p0310 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: Once the Control Unit has been booted up for the first time or if the factory settings have been defined accordingly, the parameter is defined in accordance with the power unit.

**p0311[0...n]**  Rated motor speed / Mot n_rated

<table>
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<td>Scaling:</td>
<td>-</td>
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<tr>
<td>Units group:</td>
<td>-</td>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [rpm]</td>
<td>Max</td>
<td>210000.0 [rpm]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.0 [rpm]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the rated motor speed (rating plate).
For p0311 = 0, the rated motor slip of induction motors is internally calculated and displayed in r0330.
It is especially important to correctly enter the rated motor speed for vector control and slip compensation for U/f control.

Dependency: If p0311 is changed and for p0314 = 0, the pole pair (r0313) is re-calculated automatically.
Refer to: p0310, r0313, p0314

Caution: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Notice: If p0311 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

Note: Once the Control Unit has been booted up for the first time or if the factory settings have been defined accordingly, the parameter is defined in accordance with the power unit.

**r0313[0...n]**  Motor pole pair number, actual (or calculated) / Mot PolePairNo act

<table>
<thead>
<tr>
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</thead>
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<tr>
<td>Units group:</td>
<td>-</td>
<td>Data type:</td>
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<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the number of motor pole pairs. The value is used for internal calculations.
r0313 = 1: 2-pole motor
r0313 = 2: 4-pole motor, etc.

Dependency: For p0314 > 0, the entered value is displayed in r0313.
For p0314 = 0, the pole pair number (r0313) is automatically calculated from the rated power (p0307), rated frequency (p0310) and rated speed (p0311).
Refer to: p0307, p0310, p0311, p0314

Note: For the automatic calculation, the pole pair number is set to the value of 2 if the rated speed or the rated frequency is zero.
### Parameter list

<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>p0314[0...n]</td>
<td>Motor pole pair number / Mot pole pair No.</td>
<td>Unsigned16</td>
<td>0</td>
<td>255</td>
<td>0</td>
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<tr>
<td>p0316[0...n]</td>
<td>Motor torque constant / Mot kT</td>
<td>FloatingPoint32</td>
<td>0.00 [Nm/A]</td>
<td>400.00 [Nm/A]</td>
<td>0.00 [Nm/A]</td>
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<tr>
<td>p0318[0...n]</td>
<td>Motor stall current / Mot I_standstill</td>
<td>FloatingPoint32</td>
<td>0.00 [Arms]</td>
<td>10000.00 [Arms]</td>
<td>0.00 [Arms]</td>
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<tr>
<td>p0320[0...n]</td>
<td>Motor rated magnetizing current/short-circuit current / Mot I_mag_rated</td>
<td>FloatingPoint32</td>
<td>0.000 [Arms]</td>
<td>5000.000 [Arms]</td>
<td>0.000 [Arms]</td>
</tr>
</tbody>
</table>

**Parameters**

Sets the motor pole pair number.

- **p0314 = 1**: 2-pole motor
- **p0314 = 2**: 4-pole motor, etc.

**Dependency:**
- For **p0314 = 0**, the pole pair number is automatically calculated from the rated frequency (p0310) and the rated speed (p0311) and displayed in r0313.

**Notice:**
- If **p0314** is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly.
- For induction motors, the value need only be input if the rated data of a generator is entered therefore resulting in a negative rated slip. In this case, the number of pole pairs in r0313 is too low by 1 and must be manually corrected.

Sets the motor torque constant of the synchronous motor.

- **p0316 = 0**: The torque constant is calculated from the motor data.
- **p0316 > 0**: The selected value is used as torque constant.

**Dependency:**
- Refer to: r0334

**Caution:**
- When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**
- This parameter is used for the I2t monitoring of the motor (refer to p0611).

Sets the stall current for synchronous motors (p0300 = 2xx).

**Caution:**
- When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**
- The parameter is used for the I2t monitoring of the motor (refer to p0611).

**Note:**
- This parameter is not used for induction motors (p0300 = 1xx).
### Parameters

**Parameter list**

Synchronous motors:
Sets the rated motor short-circuit current.

**Caution:**
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**
The magnetizing current p0320 for induction motors is reset when quick commissioning is exited with p3900 > 0. If, for induction motors, the magnetizing current p0320 is changed outside the commissioning phase (p0010 > 0), then the magnetizing inductance p0360 is changed so that the EMF r0337 remains constant.

**p0322[0...n]**  
**Maximum motor speed / Mot n_max**

| Access level: 1 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: C(1, 3) | Scaling: - | Data set: MDS |
| Units group: - | Unit selection: - |
| **Min** | **Max** | **Factory setting** |
| 0.0 [rpm] | 210000.0 [rpm] | 0.0 [rpm] |

**Description:**
Sets the maximum motor speed.

**Dependency:**
Refer to: p1082

**Caution:**
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Notice:**
If p0322 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly.

**p0323[0...n]**  
**Maximum motor current / Mot I_max**

| Access level: 1 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: C(1, 3) | Scaling: - | Data set: MDS |
| Units group: - | Unit selection: - |
| **Min** | **Max** | **Factory setting** |
| 0.00 [Arms] | 20000.00 [Arms] | 0.00 [Arms] |

**Description:**
Sets the maximum permissible motor current (e.g. de-magnetizing current for synchronous motors).

**Caution:**
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Notice:**
If p0323 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is pre-assigned accordingly.

**Note:**
The parameter has no effect for induction motors.
The parameter has no effect for synchronous motors if a value of 0.0 is entered. The user-selectable current limit is entered into p0640.

**p0325[0...n]**  
**Motor pole position identification current, 1st phase / Mot PolID I 1st ph**

| Access level: 4 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: U, T | Scaling: - | Data set: MDS |
| Units group: - | Unit selection: - |
| **Min** | **Max** | **Factory setting** |
| 0.000 [Arms] | 10000.000 [Arms] | 0.000 [Arms] |

**Description:**
Sets the current for the 1st phase of the two-stage technique for pole position identification routine.

**Dependency:**
The current of the 2nd phase is set in p0329.
The two-stage technique is selected with p1980 = 4.

**Notice:**
When the motor code (p0301) is changed, it is possible that p0325 is not pre-assigned.
p0325 can be pre-assigned using p0340 = 3.

**Note:**
The value is automatically pre-assigned for the following events:
- For p0325 = 0 and automatic calculation of the closed-loop control parameters (p0340 = 1, 2, 3).
- for quick commissioning (p3900 = 1, 2, 3).
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Scaling</th>
<th>Data type</th>
<th>Data set</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0326[0...n]</td>
<td>Motor stall torque correction factor / Mot M_stall_corr</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>MDS</td>
<td>C(3), U, T</td>
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<td>5 [%]</td>
<td>300 [%]</td>
<td>100 [%]</td>
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<tr>
<td>p0327[0...n]</td>
<td>Optimum motor load angle / Mot phi_load_opt</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>MDS</td>
<td>C(3), U, T</td>
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<td>0.0 [°]</td>
<td>135.0 [°]</td>
<td>90.0 [°]</td>
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<tr>
<td>p0328[0...n]</td>
<td>Motor reluctance torque constant / Mot kT_relatance</td>
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<td>MDS</td>
<td>C(3), U, T</td>
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<td>-1000.00 [mH]</td>
<td>1000.00 [mH]</td>
<td>0.00 [mH]</td>
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<tr>
<td>p0329[0...n]</td>
<td>Motor pole position identification current / Mot PolID current</td>
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<td>MDS</td>
<td>C(3), U, T</td>
<td>-</td>
<td>0.00 [Arms]</td>
<td>10000.00 [Arms]</td>
<td>0.00 [Arms]</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the correction factor for the stall torque/force at a 600 V DC link voltage.
- Sets the optimum load angle for synchronous motors with reluctance torque.
- Sets the reluctance torque constant for synchronous motors with reluctance torque (e.g. 1FE ... motors).
- Sets the current for the pole position identification routine (p1980 = 1).

**Caution:**
- When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.
- When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.
- When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.
- When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**
- When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).
- When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).
- For synchronous motors without reluctance torque, a angle of 90 degrees must be set.
- For synchronous motors without reluctance torque, the value 0 must be set.
- For a two-stage technique (p1980 = 4), the current is set for the 2nd phase. The current for the 1st phase is set in p0325.

**Dependency:**
- Refer to: p0325, p1980, r1984, r1985, r1987
### Parameter list

#### r0330[0...n] Rated motor slip / Mot slip_rated

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the rated motor slip.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>The rated slip is calculated from the rated frequency, rated speed and number of pole pairs.</td>
</tr>
<tr>
<td>Note</td>
<td>The parameter is not used for synchronous motors (p0300 = 2xx).</td>
</tr>
</tbody>
</table>

<table>
<thead>
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<th>Access level: 3</th>
<th>Calculated: -</th>
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<td>Units group:</td>
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<tr>
<td>Min</td>
<td>- [Hz]</td>
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</tr>
<tr>
<td>Max</td>
<td>- [Hz]</td>
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</table>

#### r0331[0...n] Actual motor magnetizing current/short-circuit current / Mot I_mag_rtd_act

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the rated magnetizing current from p0320.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>For p0320 = 0, the internally calculated magnetizing current is displayed.</td>
</tr>
<tr>
<td>Description</td>
<td>Synchronous motor: Displays the rated short-circuit current from p0320.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<tbody>
<tr>
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</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [Arms]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>- [Arms]</td>
<td></td>
</tr>
</tbody>
</table>

#### r0332[0...n] Rated motor power factor / Mot cos_phi_rated

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the rated power factor for induction motors.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>For IEC motors, the following applies (p0100 = 0):</td>
</tr>
<tr>
<td>Description</td>
<td>For p0308 = 0, the internally-calculated power factor is displayed.</td>
</tr>
<tr>
<td>Description</td>
<td>For p0308 &gt; 0, this value is displayed.</td>
</tr>
<tr>
<td>Description</td>
<td>For NEMA motors, the following applies (p0100 = 1):</td>
</tr>
<tr>
<td>Description</td>
<td>For p0309 = 0, the internally-calculated power factor is displayed.</td>
</tr>
<tr>
<td>Description</td>
<td>For p0309 &gt; 0, this value is converted into the power factor and displayed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Calculated: -</th>
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</tr>
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<tbody>
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<td>Data set: MDS</td>
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<tr>
<td>Units group:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

#### r0333[0...n] Rated motor torque / Mot M_rated

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the rated motor torque.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>IEC drives (p0100 = 0): unit Nm</td>
</tr>
<tr>
<td></td>
<td>NEMA drives (p0100 = 1): unit lbf ft</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Data type: FloatingPoint32</th>
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<tbody>
<tr>
<td>Can be changed:</td>
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<td>Data set: MDS</td>
</tr>
<tr>
<td>Units group:</td>
<td>7_4</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [Nm]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>- [Nm]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0334[0...n]</td>
<td>Actual motor-torque constant / Mot kT act</td>
<td>Displays the torque constant of the synchronous motor used.</td>
<td>4</td>
<td>-</td>
<td>28_1</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>MDS</td>
</tr>
<tr>
<td>p0335[0...n]</td>
<td>Motor cooling type / Motor cooling type</td>
<td>Sets the motor cooling system used.</td>
<td>2</td>
<td>C(1, 3), T</td>
<td>-</td>
<td>-</td>
<td>Integer16</td>
<td>MDS</td>
</tr>
<tr>
<td>r0337[0...n]</td>
<td>Rated motor EMF / Mot EMF_rated</td>
<td>Displays the rated EMF of the motor.</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>MDS</td>
</tr>
<tr>
<td>p0340[0...n]</td>
<td>Automatic calculation, motor/control parameters / Calc auto par</td>
<td>Setting to automatically calculate motor parameters and U/f open-loop and closed-loop control parameters from the rating plate data.</td>
<td>2</td>
<td>C(3), T</td>
<td>-</td>
<td>-</td>
<td>Integer16</td>
<td>DDS, p0180</td>
</tr>
</tbody>
</table>

**Note:**

- For induction motors, r0333 is calculated from p0307 and p0311.
- For synchronous motors, r0333 is calculated from p0305, p0316, p0327 and p0328.
- This parameter is not used for induction motors (p0300 = 1xx).
- The parameter influences the thermal 3-mass motor model.
- 1LA7 motors, frame size 56 are operated without fan.
4: Calculation of controller parameters
5: Calculation of technological limits and threshold values

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

The following parameters are influenced using p0340:

p0340 = 1:
--> All of the parameters influenced for p0340 = 2, 3, 4, 5
--> p0341, p0342, p0612, p0640, p1082, p1232, p1333, p1349, p1611, p1654, p1726, p1825, p1828

p0340 = 2:
--> p0350, p0354 ... p0360
--> p0625 (matching p0350), p0626 ... p0628

p0340 = 3:
--> All of the parameters influenced for p0340 = 4, 5
--> p0346, p0347, p0622, p1320 ... p1327, p1582, p1584, p1616, p1755, p1756, p2178

p0340 = 4:
--> p1290, p1292, p1293, p1338, p1339, p1340, p1341, p1345, p1346, p1461, p1463, p1464, p1465, p1470,
p1472, p1703, p1715, p1717, p1740, p1756, p1764, p1767, p1781, p1783, p1785, p1786, p1795

p0340 = 5:
--> p1037, p1038, p1520, p1521, p1530, p1531, p1574, p1802, p1803, p2140, p2142, p2148, p2150, p2161,
p2162, p2163, p2164, p2175, p2177, p2194, p2390, p2392, p2393

Note:
p0340 = 1 contains the calculations of p0340 = 2, 3, 4, 5.
p0340 = 2 calculates the motor parameters (p0350 ... p0360).
p0340 = 3 contains the calculations of p0340 = 4, 5.
p0340 = 4 only calculates the controller parameters.
p0340 = 5 only calculates the controller limits.

When quick commissioning is exited using p3900 > 0, p0340 is automatically set to 1.
At the end of the calculations, p0340 is automatically set to 0.

**p0341[0...n]**  Motor moment of inertia / Mot M_mom of inert

<table>
<thead>
<tr>
<th>Access level:</th>
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</tr>
<tr>
<td>Units group:</td>
<td>Unit selection: p0100</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.000000 [kgm²]</td>
<td>100000.000000 [kgm²]</td>
<td>0.000000 [kgm²]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the motor moment of inertia (without load).

**Dependency:**
IEC drives (p0100 = 0): unit kg m²
NEMA drives (p0100 = 1): unit lb ft²

The parameter value is included, together with p0342, in the rated starting time of the motor.
Refer to: p0342, r0345

**Caution:**
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**
The product of p0341 * p0342 is used when the speed controller (p0340 = 4) is calculated automatically.

**p0342[0...n]**  Ratio between the total and moment of inertia / Mot MomInert Ratio

<table>
<thead>
<tr>
<th>Access level:</th>
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<td>Data set: MDS</td>
</tr>
<tr>
<td>Units group:</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>1.000</td>
<td>10000.000</td>
<td>1.000</td>
</tr>
</tbody>
</table>

**Description:**
Sets the ratio between the total moment of inertia/mass (load + motor) and the intrinsic motor moment of inertia/mass (no load).
### Parameters

#### Parameter list

**Dependency:**
This means that together with p0341, the rated starting (accelerating time) of the motor is calculated for a vector drive.
Refer to: p0341, r0345

**Note:**
The product of p0341 * p0342 is used when the speed controller (p0340 = 4) is calculated automatically.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0343[0...n]</td>
<td>Rated motor current identified / Mot I_rated ident</td>
</tr>
<tr>
<td>p0344[0...n]</td>
<td>Motor weight (for the thermal motor model) / Mot weight th mod</td>
</tr>
<tr>
<td>r0345[0...n]</td>
<td>Nominal motor starting time / Mot t_start_rated</td>
</tr>
<tr>
<td>p0346[0...n]</td>
<td>Motor excitation build-up time / Mot t_excitation</td>
</tr>
</tbody>
</table>

#### r0343[0...n] Rated motor current identified / Mot I_rated ident

<table>
<thead>
<tr>
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<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>MDS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>p0100</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [Arms]</td>
<td>10000.00 [Arms]</td>
<td>[Arms]</td>
</tr>
</tbody>
</table>

**Description:**
Displays the identified rated motor current.

#### p0344[0...n] Motor weight (for the thermal motor model) / Mot weight th mod

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
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<table>
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<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>C(3), T</td>
<td>-</td>
<td>MDS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Unit selection</th>
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</tr>
</thead>
<tbody>
<tr>
<td>27_1</td>
<td>p0100</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 [kg]</td>
<td>50000.0 [kg]</td>
<td>[kg]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the motor weight.

**Dependency:**
IEC drives (p0100 = 0): unit kg
NEMA drives (p0100 = 1): unit lb

**Caution:**
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**
The parameter influences the thermal 3 mass model of the induction motor.
The parameter is not used for synchronous motors (p0300 = 2xx).

#### r0345[0...n] Nominal motor starting time / Mot t_start_rated

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
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<td>FloatingPoint32</td>
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</tbody>
</table>

<table>
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<tr>
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<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>MDS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- [s]</td>
<td>- [s]</td>
<td>[s]</td>
</tr>
</tbody>
</table>

**Description:**
Displays the rated motor starting time.

This time corresponds to the time from standstill up to reaching the motor rated speed and the acceleration with motor rated torque (r0333).

**Dependency:**
Refer to: r0313, r0333, p0341, p0342

#### p0346[0...n] Motor excitation build-up time / Mot t_excitation

<table>
<thead>
<tr>
<th>Access level</th>
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<th>Data type</th>
</tr>
</thead>
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<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>C(3), U, T</td>
<td>-</td>
<td>MDS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000 [s]</td>
<td>20.000 [s]</td>
<td>[s]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the excitation build-up time of the motor.

This involves the delay time between enabling the pulses and enabling the ramp-function generator. The induction motor is magnetized during this time.

**Caution:**
If there is insufficient magnetization under load or if the acceleration rate is too high, then an induction motor can stall (refer to the note).
**Parameter list**

**Note:**
The parameter is calculated using \( p0340 = 1,3 \).

For induction motors, the result depends on the rotor time constant \( (r0384) \). If this time is excessively reduced, this can result in an inadequate magnetizing of the induction motor. This is the case if the current limit is reached while building up magnetizing. For induction motors, the parameter cannot be set to 0 s (internal limit: \( 0.1 \times r0384 \)).

For permanent-magnet synchronous motors and vector control, the value depends on the stator time constant \( (r0386) \). Here, it defines the time to establish the current for encoderless operation immediately after the pulses have been enabled.

### p0347[0...n] Motor de-excitation time / Mot t_de-excitat.

**Access level:** 3  
**Can be changed:** C(3), U, T  
**Units group:** -  
**Calculated:** \( p0340 = 1,3 \)  
**Scaling:** -  
**Unit selection:** -  
**Data type:** FloatingPoint32  
**Data set:** MDS

**Description:**
Sets the de-magnetizing time (for induction motors) after the inverter pulses have been canceled.

The inverter pulses cannot be switched in (enabled) within this delay time.

**Note:**
The parameter is calculated using \( p0340 = 1,3 \).

For induction motors, if this time is shortened too much, then this can result in an inadequate de-magnetizing of the induction motor and an overcurrent condition when the pulses are subsequently enabled (only when the flying restart function is activated and the motor is rotating).

### p0350[0...n] Motor stator resistance, cold / Mot R_stator cold

**Access level:** 3  
**Can be changed:** C(3), U, T  
**Units group:** -  
**Calculated:** \( p0340 = 1,2 \)  
**Scaling:** -  
**Unit selection:** -  
**Data type:** FloatingPoint32  
**Data set:** MDS

**Description:**
Sets the stator resistance of the motor at ambient temperature \( p0625 \) (phase value).

**Dependency:**
Refer to: \( p0625, r1912 \)

**Caution:**
When selecting a catalog motor \( (p0301) \), this parameter is automatically pre-assigned and is write protected. Information in \( p0300 \) should be carefully observed when removing write protection.

**Note:**
The motor identification routine determines the stator resistance from the total stator resistance minus the cable resistance \( (p0352) \).

### p0352[0...n] Cable resistance / Mot R_cable cold

**Access level:** 3  
**Can be changed:** C(3), U, T  
**Units group:** -  
**Calculated:** -  
**Scaling:** -  
**Unit selection:** -  
**Data type:** FloatingPoint32  
**Data set:** MDS

**Description:**
Resistance of the power cable between the power unit and motor.

**Caution:**
The cable resistance should be entered prior to motor data identification. If it is used subsequently, the difference by which \( p0352 \) was changed must be subtracted from the stator resistance \( p0350 \) or motor data identification must be repeated.

**Note:**
The parameter influences the temperature adaptation of the stator resistance.

The motor identification sets the cable resistance to 20% of the measured total resistance if \( p0352 \) is zero at the time that the measurement is made. If \( p0352 \) is not zero, then the value is subtracted from the measured total stator resistance to calculate stator resistance \( p0350 \). In this case, \( p0350 \) is a minimum of 10% of the measured value.

The cable resistance is reset when quick commissioning is exited with \( p3900 > 0 \).
### Parameter List

#### p0354[0...n] Motor rotor resistance cold / Mot R_r cold

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>p0340 = 1,2</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(3), U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>MDS</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00000 [ohm]</td>
<td>Max</td>
<td>300.00000 [ohm]</td>
<td>Factory setting</td>
<td>0.00000 [ohm]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the rotor/secondary section resistance of the motor at the ambient temperature p0625. This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910).

**Dependency:** Refer to: p0625

**Caution:** When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:** The parameter is not used for synchronous motors (p0300 = 2).

#### p0356[0...n] Motor stator leakage inductance / Mot L_stator leak.

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>p0340 = 1,2</th>
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<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(3), U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>MDS</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00000 [mH]</td>
<td>Max</td>
<td>1000.00000 [mH]</td>
<td>Factory setting</td>
<td>0.00000 [mH]</td>
</tr>
</tbody>
</table>

**Description:**
Induction machine: sets the stator leakage inductance of the motor. Synchronous motor: sets the stator quadrature axis inductance of the motor. This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910).

**Caution:** When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:** If the stator leakage inductance (p0356) for induction motors is changed outside the commissioning phase (p0010 > 0), the magnetizing inductance (p0360) is automatically adapted to the new EMF (r0337). You are then advised to repeat the measurement for the saturation characteristic (p1960). For permanent-magnet synchronous motors (p0300 = 2), this is the non-saturated value and is, therefore, ideal for a low current.

#### p0357[0...n] Motor stator inductance, d axis / Mot L_stator d

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>p0340 = 1,2</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(3), U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>MDS</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00000 [mH]</td>
<td>Max</td>
<td>1000.00000 [mH]</td>
<td>Factory setting</td>
<td>0.00000 [mH]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the stator direct-axis inductance of the synchronous motor. This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910).

**Note:** For permanent-magnet synchronous motors (p0300 = 2), this is the non-saturated value and is ideal for a low current.

#### p0358[0...n] Motor rotor leakage inductance / Mot L_rot leak

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>p0340 = 1,2</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(3), U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>MDS</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00000 [mH]</td>
<td>Max</td>
<td>1000.00000 [mH]</td>
<td>Factory setting</td>
<td>0.00000 [mH]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the rotor/secondary section leakage inductance of the motor.
The value is automatically calculated using the motor model \((p0340 = 1, 2)\) or using the motor identification routine \((p1910)\).

**Caution:**
When selecting a catalog motor \((p0301)\), this parameter is automatically pre-assigned and is write protected. Information in \(p0300\) should be carefully observed when removing write protection.

**Note:**
If the rotor leakage inductance \((p0358)\) for induction motors is changed outside the commissioning phase \((p0010 > 0)\), then the magnetizing inductance \((p0360)\) is automatically adapted to the new EMF \((r0337)\). You are then advised to repeat the measurement for the saturation characteristic \((p1960)\).

### Parameter list

#### p0360[0...n] Motor magnetizing inductance / Mot Lh

**Access level:** 3
**Can be changed:** C(3), U, T
**Units group:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00000 [mH]</td>
<td>10000.00000 [mH]</td>
<td>0.00000 [mH]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the magnetizing inductance of the motor.

This parameter value is automatically calculated using the motor model \((p0340 = 1, 2)\) or using the motor identification routine \((p1910)\).

**Caution:**
When selecting a catalog motor \((p0301)\), this parameter is automatically pre-assigned and is write protected. Information in \(p0300\) should be carefully observed when removing write protection.

**Note:**
The parameter is not used for synchronous motors \((p0300 = 2)\).

#### p0362[0...n] Motor saturation characteristic flux 1 / Mot saturat.flux 1

**Access level:** 4
**Can be changed:** C(3), U, T
**Units group:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0 [%]</td>
<td>300.0 [%]</td>
<td>60.0 [%]</td>
</tr>
</tbody>
</table>

**Description:**
The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points.

This parameter specifies the y coordinate (flux) for the 1st value pair of the characteristic.

Sets the first flux value of the saturation characteristic as a [%] referred to the rated motor flux (100 %).

**Dependency:**
The following applies for the flux values:
\(p0362 < p0363 < p0364 < p0365\)
Refer to: p0366

**Note:**
For induction motors, \(p0362 = 100 \text{ %}\) corresponds to the rated motor flux.

When quick commissioning is exited with \(p3900 > 0\), then the parameter is reset if a catalog motor has not been selected (refer to \(p0300\)).

#### p0363[0...n] Motor saturation characteristic flux 2 / Mot saturat.flux 2

**Access level:** 4
**Can be changed:** C(3), U, T
**Units group:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0 [%]</td>
<td>300.0 [%]</td>
<td>85.0 [%]</td>
</tr>
</tbody>
</table>

**Description:**
The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points.

This parameter specifies the y coordinate (flux) for the 2nd value pair of the characteristic.

Sets the second flux value of the saturation characteristic as a [%] referred to the rated motor flux (100 %).

**Dependency:**
The following applies for the flux values:
\(p0362 < p0363 < p0364 < p0365\)
Refer to: p0367

**Note:**
For induction motors, \(p0363 = 100 \text{ %}\) corresponds to the rated motor flux.

When quick commissioning is exited with \(p3900 > 0\), then the parameter is reset if a catalog motor has not been selected (refer to \(p0300\)).
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0364[0...n]</td>
<td>Motor saturation characteristic flux 3 / Mot saturat. flux 3</td>
<td>Sets the third flux value of the saturation characteristic as a [%] referred to the rated motor flux (100 %).</td>
<td>For induction motors, p0364 = 100 % corresponds to the rated motor flux. When quick commissioning is exited with p3900 &gt; 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).</td>
</tr>
<tr>
<td>p0365[0...n]</td>
<td>Motor saturation characteristic flux 4 / Mot saturat. flux 4</td>
<td>Sets the fourth flux value of the saturation characteristic as a [%] referred to the rated motor flux (100 %).</td>
<td>For induction motors, p0365 = 100 % corresponds to the rated motor flux. When quick commissioning is exited with p3900 &gt; 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).</td>
</tr>
<tr>
<td>p0366[0...n]</td>
<td>Motor saturation characteristic I_mag 1 / Mot sat. I_mag 1</td>
<td>Sets the first magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).</td>
<td>When quick commissioning is exited with p3900 &gt; 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).</td>
</tr>
</tbody>
</table>
### p0367[0...n] Motor saturation characteristic I_mag 2 / Mot sat. I_mag 2

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(3), U, T</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points.
This parameter specifies the x coordinate (magnetizing current) for the 2nd value pair of the characteristic.
Sets the second magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).

**Dependency:**
The following applies for the magnetizing currents:
p0366 < p0367 < p0368 < p0369
Refer to: p0363

**Note:**
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

---

### p0368[0...n] Motor saturation characteristic I_mag 3 / Mot sat. I_mag 3

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(3), U, T</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points.
This parameter specifies the x coordinate (magnetizing current) for the 3rd value pair of the characteristic.
Sets the third magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).

**Dependency:**
The following applies for the magnetizing currents:
p0366 < p0367 < p0368 < p0369
Refer to: p0364

**Note:**
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

---

### p0369[0...n] Motor saturation characteristic I_mag 4 / Mot sat. I_mag 4

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(3), U, T</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points.
This parameter specifies the x coordinate (magnetizing current) for the 4th value pair of the characteristic.
Sets the fourth magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).

**Dependency:**
The following applies for the magnetizing currents:
p0366 < p0367 < p0368 < p0369
Refer to: p0365

**Note:**
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).
Parameters

Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0370[0...n]</td>
<td>Displays the motor stator resistance at an ambient temperature (p0625).</td>
<td>Refer to: p0625</td>
<td>The value does not include the cable resistance.</td>
</tr>
<tr>
<td>r0372[0...n]</td>
<td>Displays the total cable resistance between power unit and motor, as well as the internal converter resistance.</td>
<td>Refer to: r0238, p0352</td>
<td></td>
</tr>
<tr>
<td>r0373[0...n]</td>
<td>Displays the rated motor stator resistance at rated temperature (total of p0625 and p0627).</td>
<td>Refer to: p0627</td>
<td>The parameter is not used for synchronous motors (p0300 = 2xx).</td>
</tr>
<tr>
<td>r0374[0...n]</td>
<td>Displays the motor rotor resistance at an ambient temperature p0625.</td>
<td>Refer to: p0625</td>
<td>The parameter is not used for synchronous motors (p0300 = 2xx).</td>
</tr>
<tr>
<td>r0376[0...n]</td>
<td>Displays the rated motor rotor resistance at rated temperature (total of p0625 and p0628).</td>
<td>Refer to: p0628</td>
<td>The parameter is not used for synchronous motors (p0300 = 2xx).</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Access level</td>
<td>Data type</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>r0377[0...n]</td>
<td>Motor leakage inductance, total / Mot L_leak total</td>
<td>4</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Displays the stator leakage inductance of the motor including the motor reactor (p0233).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r0378[0...n]</td>
<td>Motor stator inductance, d axis / Mot L_stator d</td>
<td>4</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Displays the stator longitudinal inductance of the synchronous motor including the motor reactor (p0233).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r0382[0...n]</td>
<td>Motor magnetizing inductance transformed / Mot L_magn transf</td>
<td>4</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Displays the magnetizing inductance of the motor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>The parameter is not used for synchronous motors (p0300 = 2xx).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r0384[0...n]</td>
<td>Motor rotor time constant / damping time constant d axis / Mot T_rotor/T_Dd</td>
<td>3</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Displays the rotor time constant.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>The parameter is not used for synchronous motors. The value is calculated from the total of the inductances on the rotor side (p0358, p0360) divided by the rotor resistance (p0354). The temperature adaptation of the rotor resistance for induction motors is not taken into account.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r0386[0...n]</td>
<td>Motor stator leakage time constant / Mot T_stator leak</td>
<td>4</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Displays the stator leakage time constant.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>The value is calculated from the total of all leakage inductances (p0233, p0356, p0358) divided by the total of all motor resistances (p0350, p0352, p0354). The temperature adaptation of the resistances is not taken into account.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0395[0...n]</td>
<td>Actual stator resistance / R_stator act</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>MDS</td>
<td>-</td>
<td>-</td>
<td>[ohm]</td>
<td>[ohm]</td>
<td>- [ohm]</td>
</tr>
<tr>
<td>Description:</td>
<td>Displays the actual stator resistance (phase value). The parameter value also contains the temperature-independent cable resistance. Dependency: In the case of induction motors the parameter is also affected by the motor temperature model. Refer to: p0350, p0352, p0620 Note: In each case, only the stator resistance of the active Motor Data Set is included with the stator temperature of the thermal motor model.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| r0396[0...n] | Actual rotor resistance / R_rotor act | 3 | - | FloatingPoint32 | - | - | MDS | - | - | [ohm] | [ohm] | - [ohm] |
| Description: | Displays the actual rotor resistance (phase value). The parameter is affected by the motor temperature model. Dependency: Refer to: p0354, p0620 Note: In each case, only the rotor resistance of the active Motor Data Set is included with the rotor temperature of the thermal motor model. This parameter is not used for synchronous motors (p0300 = 2xx). |

| p0422[0...n] | Absolute encoder linear measuring step resolution / Enc abs meas step | 3 | - | Unsigned32 | C(4) | - | EDS | - | - | 0 [nm] | 4294967295 [nm] | 100 [nm] |
| Description: | Sets the resolution of the absolute position for a linear absolute encoder. Caution: This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection. 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. |

| p0490 | Meas. probe invert / Probe inv | 3 | - | Unsigned32 | U, T | - | - | - | - | - | - | 0000 bin |
| Description: | Setting to invert the digital input signals to connect a measuring probe. Bit field: | Bit | Signal name | 1 signal | 0 signal | FP |
| 03 | DI 3 (T. 8) | Inverted | Not inverted | - |
Parameter list

Dependency:
Refer to: p0580

Note:
When the measuring probe is inverted, this has no effect on the status displays of the digital inputs (r0721, r0722, r0723).

### p0500 Technology application / Tec application

<table>
<thead>
<tr>
<th>Access level: 4</th>
<th>Calculated: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C(1, 5), T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

#### PM230

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

**Description:**
Sets the technology application.

The parameter influences the calculation of open-loop and closed-loop control parameters that is e.g. initiated using p0340 = 5.

**Value:**
- 3: Pumps and fans, efficiency optimization

**Notice:**
If the technological application is set to p0500 = 0 ... 3 during commissioning (p0010 = 1, 5, 30), the operating mode (p1300) is pre-set accordingly.

**Note:**
The calculation of parameters dependent on the technology application can be called up as follows:
- when exiting quick commissioning using p3900 > 0
- when writing p0340 = 1, 3, 5

For p0500 = 3 and when the calculation is initiated, the following parameters are set:
- p1574 = 2 V
- p1580 = 100 % (efficiency optimization)
- p1750.2 = 1: Encoderless control of the induction motor is effective down to zero frequency.
- p1802 = 10 (SVM/FLB with overmodulation and modulation depth reduction over 57 Hz)
- p1803 = 115 %

#### p0500 Technology application / Tec application

<table>
<thead>
<tr>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C(1, 5), T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

#### PM240

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

#### PM250, PM260

**Description:**
Sets the technology application.

The parameter influences the calculation of open-loop and closed-loop control parameters that is e.g. initiated using p0340 = 5.

**Value:**
- 0: Standard drive
- 1: Pumps and fans
- 2: Sensorless closed-loop control down to f = 0 (passive loads)
- 3: Pumps and fans, efficiency optimization

**Notice:**
If the technological application is set to p0500 = 0 ... 3 during commissioning (p0010 = 1, 5, 30), the operating mode (p1300) is pre-set accordingly.

**Note:**
The calculation of parameters dependent on the technology application can be called up as follows:
- when exiting quick commissioning using p3900 > 0
- when writing p0340 = 1, 3, 5

For p0500 = 0 and when the calculation is initiated, the following parameters are set:
- p1574 = 10 V
- p1750.2 = 0
- p1802 = 4 (SVM/FLB without overcontrol) (PM240: p1802 = 0, PM260: p1802 = 2)
- p1803 = 106 % (PM240: p1803 = 103 %)

For p0500 = 1 and when the calculation is initiated, the following parameters are set:
- p1574 = 2 V
- p1750.2 = 0
- p1802 = 4 (SVM/FLB without overcontrol) (PM240: p1802 = 0)
- p1803 = 106 % (PM260: p1803 = 103 %)
For \( p0500 = 2 \) and when the calculation is initiated, the following parameters are set:
- \( p1574 = 2 \) V (for separately-excited synchronous motors: 4 V)
- \( p1750.2 = 1 \)
- \( p1802 = 4 \) (SVM/FLB without overcontrol) (PM240: \( p1802 = 0 \))
- \( p1803 = 106 \% \) (PM260: \( p1803 = 103 \% \))

For \( p0500 = 3 \) and when the calculation is initiated, the following parameters are set:
- \( p1574 = 2 \) V
- \( p1750.2 = 1 \)
- \( p1802 = 4 \) (SVM/FLB without overcontrol) (PM240: \( p1802 = 0 \))
- \( p1803 = 106 \% \) (PM260: \( p1803 = 103 \% \))

Re \( p1750 \):
The setting of \( p1750 \) is only relevant for induction motors.
\( p1750.2 = 1 \): Encoderless control of the induction motor is effective down to zero frequency.
This operating mode is possible for passive loads. These include applications where the load does not generate regenerative torque when breaking away and the motor comes to a standstill (zero speed) itself when the pulses are inhibited.
Re \( p1802 / p1803 \):
\( p1802 \) and \( p1803 \) are only changed, in all cases, if a sine-wave output filter (\( p0230 = 3, 4 \)) has not been selected.

### p0505  Selecting the system of units / Unit sys select

| Access level: | 1 | Calculated: | - |
| Can be changed: | C(5) | Scaling: | - |
| Units group: | - | Data type: | Integer16 |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the actual system of units.

**Value:**
1: SI system of units
2: System of units, referred/SI
3: US system of units
4: System of units, referred/US

**Dependency:**
The parameter cannot be changed when master control is active.

**Caution:**
If a per unit representation is selected and if the reference parameters (e.g. \( p2000 \)) are subsequently changed, then the physical significance of several control parameters is also adapted at the same time. As a consequence, the control behavior can change (see \( p1576, p1621, p1744, p1752, p1755 \) and \( p1609, p1612, p1619, p1620 \)).

**Note:**
Reference parameter for the unit system % are, for example, \( p2000 ... p2004 \). Depending on what has been selected, these are displayed using either SI or US units.

### p0573  Inhibit automatic reference value calculation / Inhibit calc

| Access level: | 3 | Calculated: | - |
| Can be changed: | U, T | Scaling: | - |
| Units group: | - | Data type: | Integer16 |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Setting to inhibit the calculation of reference parameters (e.g. \( p2000 \)) when automatically calculating the motor and closed-loop control parameters (\( p0340, p3900 \)).

**Value:**
0: No
1: Yes

**Notice:**
The inhibit for the reference value calculation is canceled when new motor parameters (e.g. \( p0305 \)) are entered and only one drive data set exists (\( p0180 = 1 \)). This is the case during initial commissioning.

Once the motor and control parameters have been calculated (\( p0340, p3900 \)), the inhibit for the reference value calculation is automatically re-activated.
### Notes

- If value = 0:
The automatic calculation (p0340, p3900) overwrites the reference parameters.
- If value = 1:
The automatic calculation (p0340, p3900) does not overwrite the reference parameters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0580 Measuring probe, input terminal / MT input terminal</td>
<td>Sets the input terminal for the measuring probe for speed actual value measurement.</td>
<td>0: No meas probe, 23: DI 3 (T. 8)</td>
<td>Refer to: p0581</td>
</tr>
<tr>
<td>p0581 Measuring probe, edge / MT edge</td>
<td>Sets the edge to evaluate the measuring probe signal for speed actual value measurement.</td>
<td>0: 0/1 edge, 1: 1/0 edge</td>
<td>Refer to: p0580</td>
</tr>
<tr>
<td>p0582 Measuring probe, pulses per revolution / MT pulses per rev</td>
<td>Sets the number of pulses per revolution (e.g. for disks with holes).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Units group</th>
<th>Data set</th>
<th>Scaling</th>
<th>Units group</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0583</td>
<td>Measuring probe, maximum measuring time / MT t_meas max</td>
<td>Sets the maximum measuring time for the measuring probe.</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>If a new pulse is not received before the maximum measuring time has expired, then the speed actual value in r0586 is set to zero. This timer is re-started with the next pulse.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to: r0586</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0585</td>
<td>Measuring probe gear factor / Probe gear factor</td>
<td>Sets the BERO gear factor. The measured speed is multiplied by the BERO gear factor and is displayed in r0586.</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>r0586</td>
<td>CO: Measuring probe, speed actual value / MT n_act</td>
<td>Displays the speed actual value measured using the BERO.</td>
<td>3</td>
<td>p2000</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>3_1</td>
<td>p0505</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>r0587</td>
<td>CO: Measuring probe, measuring time measured / MT t_meas measured</td>
<td>Displays the time between the last two BERO pulses. The measuring time is specified as 32-bit value with a resolution of 1/48 µs.</td>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
If a new pulse is not received before the maximum measured time in p0583 expires, then r0587 is set to the maximum measuring time.

Dependency: Refer to: p0580
Note: For p0580 = 0 (no measuring probe), a value of zero is displayed here.

**r0588**

**CO: Measuring probe, pulse counter / MT pulse counter**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Scaling:</th>
<th>Data set:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the number of measuring pulses that have occurred (been received) up until now.

**Dependency:** Refer to: p0580
**Note:** After reaching 4294967295 (2^32 - 1), the counter starts again at 0.

**r0589**

**Measuring probe, delay time / MT t_delay**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Scaling:</th>
<th>Data set:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the time since the last measuring pulse was detected.

The delay time is specified as 32-bit value with a resolution of 1/48 µs.

When a measuring pulse occurs (is received) the delay time is reset and is limited to the maximum measuring time in p0583.

**Dependency:** Refer to: p0580
**Note:** For p0580 = 0 (no measuring probe), a value of zero is displayed here.

**p0595**

**Technological unit selection / Tech unit select**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>Integer16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Scaling:</th>
<th>Data set:</th>
</tr>
</thead>
<tbody>
<tr>
<td>C(5)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>46</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:** Selects the units for the parameters of the technology controller.

**Value:**

1: %
2: 1 referred, no dimensions
3: bar
4: °C
5: Pa
6: ltr/s
7: m³/s
8: ltr/min
9: m³/min
10: ltr/h
11: m³/h
12: kg/s
13: kg/min
14: kg/h
### Parameters

#### Parameter list

| 15 | \( t/\text{min} \) |
| 16 | \( t/\text{h} \) |
| 17 | \( \text{N} \) |
| 18 | \( \text{kN} \) |
| 19 | \( \text{Nm} \) |
| 20 | \( \text{psi} \) |
| 21 | \( ^\circ\text{F} \) |
| 22 | \( \text{gallon/s} \) |
| 23 | \( \text{inch}^3/\text{s} \) |
| 24 | \( \text{gallon/\text{min}} \) |
| 25 | \( \text{inch}^3/\text{\text{min}} \) |
| 26 | \( \text{gallon/h} \) |
| 27 | \( \text{inch}^3/\text{h} \) |
| 28 | \( \text{lb/s} \) |
| 29 | \( \text{lb/\text{min}} \) |
| 30 | \( \text{lb/h} \) |
| 31 | \( \text{lbf} \) |
| 32 | \( \text{lbf ft} \) |
| 33 | \( \text{K} \) |
| 34 | \( \text{rpm} \) |
| 35 | \( \text{parts/\text{min}} \) |
| 36 | \( \text{m/s} \) |
| 37 | \( \text{ft/s} \) |
| 38 | \( \text{ft}^3/\text{\text{min}} \) |
| 39 | \( \text{BTU/\text{min}} \) |
| 40 | \( \text{BTU/\text{h}} \) |
| 41 | \( \text{mbar} \) |
| 42 | \( \text{inch wg} \) |
| 43 | \( \text{ft} \) |
| 44 | \( \text{m wg} \) |
| 45 | \% \text{r.h.} |
| 46 | \( \text{g/kg} \) |

**Dependency:**
Only units of parameters with unit group 9_1 can be changed over using this parameter.

Refer to: p0596

---

**p0596**  
**Technological unit reference quantity / Tech unit ref qty**

<table>
<thead>
<tr>
<th>Access level: 1</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Min: 0.01**  
**Max: 340.28235E36**  
**Factory setting: 1.00**

**Description:**
Sets the reference quantity for the technological units.

When changing over using changeover parameter p0595 to absolute units, all of the parameters involved refer to the reference quantity.

**Dependency:**
Refer to: p0595

**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>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C(3), U, T</td>
<td>Scaling: -</td>
<td>Data set: MDS</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
</tbody>
</table>

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

**Value:**
0: No sensor  
1: PTC alarm & timer
2: KTY84  
4: Bimetallic NC contact alarm & timer  

Dependency: The thermal motor model is only calculated for p0612.1 = 1.  
Caution: Re sensor type "KTY84" (p0601 = 2):  
If the motor temperature sensor is not connected but another encoder, then the temperature adaptation of the motor resistances must be switched out (p0620 = 0). Otherwise, in controlled-loop operation, torque errors will occur that will mean that the motor will not be able to be stopped.  
Note: Re sensor type "PTC thermistor" (p0601 = 1):  
Tripping resistance = 1650 Ohm.

### p0604[0...n] Mot_temp_mod 1/KTY alarm threshold / Mod 1/KTY A thresh

| Access level: | 2 | Calculated: | - | Data type: | FloatingPoint32 |
| Can be changed: | C(3), U, T | Scaling: | - | Data set: | MDS |
| Units group: | 21_1 | Unit selection: | p0505 |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 [°C]</td>
<td>240.0 [°C]</td>
<td>130.0 [°C]</td>
</tr>
</tbody>
</table>

Description: Sets the alarm threshold for monitoring the motor temperature for motor temperature model 1 or KTY.  
After the alarm threshold is exceeded, alarm A07910 is output and timer (p0606) is started.  
If the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output.  
Dependency: Refer to: p0606, p0612  
Refer to: F07011, A07910  
Caution: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.  
Note: The hysteresis is 2 K.  
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

### p0605[0...n] Mot_temp_mod 1/2 threshold / Threshold

| Access level: | 3 | Calculated: | - | Data type: | FloatingPoint32 |
| Can be changed: | C(3), U, T | Scaling: | - | Data set: | MDS |
| Units group: | 21_1 | Unit selection: | p0505 |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 [°C]</td>
<td>240.0 [°C]</td>
<td>145.0 [°C]</td>
</tr>
</tbody>
</table>

Description: Sets the threshold for monitoring the motor temperature for motor temperature model 1/2.  
Motor temperature model 1 (p0612.0 = 1): alarm threshold  
- Alarm A07910 is output after the alarm threshold is exceeded.  
Motor temperature model 2 (p0612.1 = 1): fault threshold  
- Fault F07911 is output after the fault threshold is exceeded.  
Dependency: Refer to: p0606, p0611, p0612  
Refer to: F07011, A07911  
Caution: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.  
Note: The hysteresis is 2 K.  
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).
Parameter list

**p0606[0...n]** Mot_temp_mod 2/KTY timer / Mod 2/KTY t_timer

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the timer for monitoring the motor temperature for motor temperature model 2 or KTY.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>4</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>C(3), U, T</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0.000 [s]</td>
</tr>
<tr>
<td>Max</td>
<td>600.000 [s]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.000 [s]</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p0604, p0605
- Refer to: F07011, A07910

**Note:**
- With p0606 = 0 s, the timer is de-activated and only the fault threshold is effective.
- KTY sensor: When setting the minimum value, the timer is disabled and a fault is not output until p0605 is exceeded.
- PTC sensor, bimetallic NC contact: The timer minimum value has no special significance.

**p0607[0...n]** Temperature sensor fault timer / Sensor fault time

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the timer between the output of alarm and fault for a temperature sensor fault.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>4</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>C(3), U, T</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0.000 [s]</td>
</tr>
<tr>
<td>Max</td>
<td>600.000 [s]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.100 [s]</td>
</tr>
</tbody>
</table>

**Notice:**
- The parameterized time is internally rounded-off to an integer multiple of 48 ms.

**Note:**
- If the motor is an induction motor, the timer is switched off when setting the minimum value and no alarm is output. Temperature monitoring is then based on the thermal model.

**p0610[0...n]** Motor overtemperature response / Mot temp response

| Description: | Sets the system response when the motor temperature reaches the alarm threshold. |
| Value: | 0: No response only alarm no reduction of I_max |
| | 1: Alarm with reduction of I_max and fault |
| | 2: Alarm and fault no reduction of I_max |
| Access level: | 3 |
| Can be changed: | C(3), T |
| Units group: | - |
| Min | 0 |
| Max | 2 |
| Factory setting | 2 |

**Dependency:**
- Refer to: p0601, p0604, p0605
- Refer to: F07011, A07910

**Note:**
- The I_max reduction is not executed for PTC (p0601 = 1) or bimetallic NC contact (p0601 = 4).
- The I_max reduction results in a lower output frequency.
- If value = 0:
  - p0606 is not started, therefore only alarm A07910 is output.
- If value = 1:
  - PTC: Same as value = 2 because there is no reduction in I_max.
  - KTY84: Alarm A07910 is output, I_max is reduced and p0606 is started. After p0606 has elapsed, fault F0711 is set.
If value = 2:
Alarm A07910 is output and p0606 is started. After p0606 has elapsed, fault F0711 is set.

### Parameter list

**p0611[0...n] I2t motor model thermal time constant / I2t mot_mod T**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C(3), U, T</td>
<td>Scaling: -</td>
<td>Data set: MDS</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0 [s]</td>
<td>20000 [s]</td>
<td>0 [s]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the winding time constant.
The time constant specifies the warm-up time of the cold stator winding when loaded with the motor standstill current up until a temperature rise of 63 % of the continuously permissible winding temperature has been reached.

**Dependency:**
This parameter is only used for synchronous motors (p0300 = 2xx).
Refer to: r0034, p0612, p0615
Refer to: F07011, A07012, A07910

**Caution:**
This parameter is automatically pre-set from the motor database for motors from the motor list (p0301).
When selecting a catalog motor, this parameter cannot be changed (write protection). Information in p0300 should be carefully observed when removing write protection.

**Note:**
When parameter p0611 is reset to 0, then this switches out the thermal I2t motor model (also refer to p0612).
If no temperature sensor is parameterized, then the ambient temperature for the thermal motor model is referred to p0625.

**p0612[0...n] Mot_temp_mod activation / Mot_temp_mod act**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: p0340 = 1</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: MDS</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0010 bin</td>
</tr>
</tbody>
</table>

**Description:**
Setting to activate the motor temperature model.

**Bit field:**
- **00** Activating motor temperature model 1 (I2t) Yes No -
- **01** Activate motor temperature model 2 Yes No -

**Dependency:**
Refer to: r0034, p0604, p0605, p0606, p0611, p0615, p0625, p0626, p0627, p0628
Refer to: F07011, A07012, A07910

**Note:**
Mot_temp_mod: motor temperature model
Re bit 00:
This bit is only used for permanent-magnet synchronous motors (p0300 = 2xx). It is only possible to activate this motor temperature model (I2t) for a time constant greater than zero (p0611 > 0).
Re bit 01:
This bit is used to activate/deactivate the motor temperature model for induction motors.

**p0615[0...n] Mot_temp_mod 1 (I2t) fault threshold / I2t F thresh**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C(3), U, T</td>
<td>Scaling: -</td>
<td>Data set: MDS</td>
</tr>
<tr>
<td>Units group: 21_1</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.0 [°C]</td>
<td>220.0 [°C]</td>
<td>180.0 [°C]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the fault threshold for monitoring the motor temperature for motor temperature model 1 (I2t).
- Fault F07911 is output after the fault threshold is exceeded.

**Dependency:**
The parameter is only used for permanent-magnet synchronous motors (p0300 = 2xx).
Refer to: r0034, p0611, p0612
Refer to: F07011, A07012
Caution: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The hysteresis is 2 K.

**p0620[0...n]**  
Thermal adaptation, stator and rotor resistance / Mot therm_adapt R  

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated: p0340 = 1</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(3), U</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Description: Sets the thermal adaptation of the stator/primary section resistance and rotor/secondary section resistance according to r0395 and r0396.

Value:
- 0: No thermal adaptation of stator and rotor resistances
- 1: Resistances adapted to the temperatures of the thermal model
- 2: Resistances adapted to the measured stator winding temperature

Note:
- For p0620 = 1, the following applies:
  - The stator resistance is adapted using the temperature in r0035 and the rotor resistance together with the model temperature in r0633.

- For p0620 = 2, the following applies:
  - The stator resistance is adapted using the temperature in r0035. If applicable, the rotor temperature for adapting the rotor resistance is calculated from the stator temperature (r0035) as follows:
    \[
    \theta_R = \frac{r0628 + r0625}{r0627 + r0625} \times r0035
    \]

**p0621[0...n]**  
Identification stator resistance after restart / Rst_ident Restart  

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(3), T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

Description: Selects the identification of the stator resistance after booting the Control Unit (only for vector control).

The identification is used to measure the actual stator resistance and from the ratio of the result of motor data identification (p0350) to the matching ambient temperature (p0625) the actual mean temperature of the stator winding is calculated. The result is used to initialize the thermal motor model.

- p0621 = 1:
  - Identification of the stator resistance only when the drive is powered up for the first time (pulse enable) after booting the Control Unit.

- p0621 = 2:
  - Identification of the stator resistance every time the drive is powered up (pulse enable).

Value:
- 0: No Rs identification
- 1: Rs identification after switching-on again
- 2: Rs identification after switching-on each time

Dependency:
- perform motor data identification (see p1910) with cold motor.
- enter ambient temperature at time of motor data identification in p0625.

Refer to: p0622, r0623

Notice: The calculated stator temperature can only be compared with the measured value of a temperature sensor (KTY) to a certain extent, as the sensor is usually the warmest point of the stator winding, whereas the measured value of identification reflects the mean value of the stator winding.

Furthermore this is a short-time measurement with limited accuracy that is performed during the magnetizing phase of the induction motor.

Note:
- The measurement is carried out:
  - For induction motors
  - When vector control is active (see p1300)
  - If a temperature sensor (KTY) has not been connected
  - When the motor is at a standstill when switched on
When a flying restart is performed on a rotating motor, the temperatures of the thermal motor model are set to a third of the overtemperatures. This occurs only once, however, when the CU is booted (e.g. after a power failure). If identification is activated, the magnetizing time is determined via p0622 and not via p0346. Quick magnetizing (p1401.6) is de-energized internally and alarm A07416 is displayed. The speed is enabled after completion of the measurement.

**p0622[0...n]**  
**Motor excitation time for Rs_ident after powering up again / t_excit Rs_id**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated:</th>
<th>p0340 = 1,3</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>Calculated:</td>
<td>-</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Units group: 1</td>
<td>Scaling: -</td>
<td>-</td>
<td>Data set: MDS</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.000 [s]</td>
<td>20.000 [s]</td>
<td>0.000 [s]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the excitation time of the motor for the stator resistance identification after powering up again (restart).

**Dependency:** Refer to: p0621, r0623

**Note:**
- For p0622 < p0346 the following applies:
  - If identification is activated, the magnetizing time is influenced by p0622. The speed is enabled after measurement is complete, but not before the time in p0346 has elapsed (see r0056 bit 4). The time taken for measurement also depends on the settling time of the measured current.
  - For p0622 >= p0346 the following applies:
    - Parameter p0622 is internally limited to the magnetizing time p0346, so that p0346 represents the maximum possible magnetizing time during identification. The entire measurement period (magnetizing plus measurement settling time plus measuring time) will always be greater than p0346.

**r0623**  
**Stator resistance of Rs identification after powering up again / R_stator Rs-Id**

<table>
<thead>
<tr>
<th>Access level: 4</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>Calculated:</td>
<td>-</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Units group: 1</td>
<td>Scaling: -</td>
<td>-</td>
<td>Data set: MDS</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>-</td>
<td>Factory setting</td>
</tr>
<tr>
<td>- [ohm]</td>
<td>- [ohm]</td>
<td>- [ohm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the identified stator resistance after the Rs identification after powering up again.

**Dependency:** Refer to: p0621, p0622

**p0625[0...n]**  
**Motor ambient temperature / Mot T_ambient**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated:</th>
<th>p0340 = 1,2</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>Calculated:</td>
<td>-</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Units group: 21_1</td>
<td>Scaling: -</td>
<td>-</td>
<td>Data set: MDS</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>-</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-40 [°C]</td>
<td>80 [°C]</td>
<td>20 [°C]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Defines the ambient temperature of the motor for calculating the motor temperature model.

**Note:** The parameters for stator and rotor resistance (p0350, p0354) refer to this temperature.

**p0626[0...n]**  
**Motor overtemperature, stator core / Mot T_over core**

<table>
<thead>
<tr>
<th>Access level: 4</th>
<th>Calculated:</th>
<th>p0340 = 1,2</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>Calculated:</td>
<td>-</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Units group: 21_2</td>
<td>Scaling: -</td>
<td>-</td>
<td>Data set: MDS</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>-</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:** Defines the rated overtemperature of the stator core referred to the ambient temperature.

**Dependency:** For 1LA7 motors (refer to p0300), the parameter is pre-set as a function of p0307 and p0311. Refer to: p0625
**Parameters**

### Parameter list

**Note:** When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

**p0627[0...n]** *Motor overtemperature, stator winding / Mot T_over stator*

- **Access level:** 4
- **Can be changed:** C(3), U, T
- **Units group:** 21 _2
- **Min:** 20 [K]
- **Max:** 200 [K]
- **Factory setting:** 80 [K]

**Description:** Defines the rated overtemperature of the stator winding referred to the ambient temperature.

**Dependency:**

For 1LA7 motors (refer to p0300), the parameter is pre-set as a function of p0307 and p0311.

**Refer to:** p0625

**Note:** When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

**p0628[0...n]** *Motor overtemperature rotor winding / Mot T_over rotor*

- **Access level:** 4
- **Can be changed:** C(3), U, T
- **Units group:** 21 _2
- **Min:** 20 [K]
- **Max:** 200 [K]
- **Factory setting:** 100 [K]

**Description:** Defines the rated overtemperature of the squirrel cage rotor referred to ambient temperature.

**Dependency:**

For 1LA7 motors (refer to p0300), the parameter is pre-set as a function of p0307 and p0311.

**Refer to:** p0625

**Note:** When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

**r0630[0...n]** *Mot_temp_mod ambient temperature / Mod T_ambient*

- **Access level:** 4
- **Can be changed:**
- **Units group:** 21 _1
- **Min:** - [°C]
- **Max:** - [°C]
- **Factory setting:** - [°C]

**Description:** Displays the ambient temperature of the motor temperature model.

**r0631[0...n]** *Mot_temp_mod stator iron temperature / Mod T_stator*

- **Access level:** 4
- **Can be changed:**
- **Units group:** 21 _1
- **Min:** - [°C]
- **Max:** - [°C]
- **Factory setting:** - [°C]

**Description:** Displays the stator core temperature of the motor temperature model.

**r0632[0...n]** *Mot_temp_mod stator winding temperature / Mod T_winding*

- **Access level:** 4
- **Can be changed:**
- **Units group:** 21 _1
- **Min:** - [°C]
- **Max:** - [°C]
- **Factory setting:** - [°C]

**Description:** Displays the stator winding temperature of the motor temperature model.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r0633[0...n]</strong> Mot_temp_mod rotor temperature / Mod T_rotor</td>
<td>Displays the rotor temperature of the motor temperature model.</td>
<td>For motor temperature model 3 (p0612.2 = 1), this parameter is not valid:</td>
</tr>
<tr>
<td><strong>p0634[0...n]</strong> Q flux flux constant unsaturated / PSIQ KPSI UNSAT</td>
<td>The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients. The parameter weights the unsaturated component of the quadrature axis flux function.</td>
<td></td>
</tr>
<tr>
<td><strong>p0635[0...n]</strong> Q flux quadrature axis current constant unsaturated / PSIQ KIQ UNSAT</td>
<td>The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients. This parameter describes the interdependency of the unsaturated component of the quadrature axis current.</td>
<td>Refer to: p0634</td>
</tr>
<tr>
<td><strong>p0636[0...n]</strong> Q flux direct axis current constant unsaturated / PSIQ KID UNSAT</td>
<td>The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients. This parameter describes the interdependency of the unsaturated component of the direct axis current.</td>
<td>Refer to: p0634</td>
</tr>
<tr>
<td><strong>p0637[0...n]</strong> Q flux flux gradient saturated / PSIQ Grad SAT</td>
<td>The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients. This parameter describes the gradients of the saturated component over the quadrature axis current.</td>
<td>Refer to: p0634, p0635, p0636</td>
</tr>
</tbody>
</table>
**Parameters**

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0640[n]</td>
<td>Current limit / Current limit</td>
<td>2</td>
<td>C(1, 3), U, T</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>0.00 [Arms]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>p0340 = 1</td>
<td></td>
<td></td>
<td>10000.00 [Arms]</td>
</tr>
<tr>
<td>p0641[n]</td>
<td>CI: Current limit, variable / Curr lim var</td>
<td>3</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>U32 / FloatingPoint32</td>
<td>CDS, p0170</td>
<td>1</td>
</tr>
<tr>
<td>p0650[n]</td>
<td>Actual motor operating hours / Mot t_oper act</td>
<td>3</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>Unsigned32</td>
<td>MDS</td>
<td>0 [h]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 [h]</td>
<td></td>
<td></td>
<td>4294967295 [h]</td>
</tr>
<tr>
<td>p0651[n]</td>
<td>Motor operating hours maintenance interval / Mot t_op maint</td>
<td>3</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>Unsigned32</td>
<td>MDS</td>
<td>0 [h]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 [h]</td>
<td></td>
<td></td>
<td>150000 [h]</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the current limit.
- The value is referred to p0640.

**Dependency:**
- Refer to: r0209, p0323

**Note:**
- The parameter is part of the quick commissioning (p0010 = 1); this means that it is appropriately pre-assigned when changing p0305. The current limit p0640 is limited to r0209. The resulting current limit is displayed in r0067 and if required, r0067 is reduced by the thermal model of the power unit.
- The torque and power limits (p1520, p1521, p1530, p1531) matching the current limit are automatically calculated when exiting the quick commissioning using p3900 > 0 or using the automatic parameterization with p0340 = 3, 5. p0640 is limited to 4.0 x p0305.
- p0640 is pre-assigned for the automatic self commissioning routine (e.g. to 1.5 x p0305, with p0305 = r0207[1]). p0640 must be entered when commissioning the system. This is the reason that p0640 is not calculated by the automatic parameterization when exiting the quick commissioning (p3900 > 0).

**Description:**
- Displays the operating hours for the corresponding motor.
- The motor operating time counter continues to run when the pulses are enabled. When the pulse enable is withdrawn, the counter is held and the value saved.

**Dependency:**
- Refer to: p0651
- Refer to: A01590

**Note:**
- The operating hours counter in p0650 can only be reset to 0.
- The operating hours counter only runs with drive data set 0 and 1 (DDS).

**Description:**
- Sets the service/maintenance intervals in hours for the appropriate motor.
- An appropriate fault is output when the operating hours set here are reached.
### Parameter list

**Dependency:**
Refer to: p0650
Refer to: A01590

**Note:**
For p0651 = 0, the operating hours counter is disabled.
When setting p0651 to 0, then p0650 is automatically set to 0.
The operating hours counter only runs with drive data set 0 and 1 (DDS).

#### r0720[0..4]
**CU number of inputs and outputs / CU I/O count**

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>-</th>
</tr>
</thead>
</table>

**Units group:**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

**Description:**
Displays the number of inputs and outputs

**Index:**

- [0] = Number of digital inputs
- [1] = Number of digital outputs
- [2] = Number of digital input/outputs bidirectional
- [3] = Number of analog inputs
- [4] = Number of analog outputs

#### r0721
**CU digital inputs, terminal actual value / CU DI actual value**

**CU240B-2**

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-</td>
<td>Unsigned32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>-</th>
</tr>
</thead>
</table>

**Units group:**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</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 (p0795.x = 1) to terminal mode (p0795.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 (T. 5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (T. 6)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (T. 7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (T. 8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI 11 (T. 3, 4) AI 0</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**
DI: Digital Input
T: Terminal

#### r0721
**CU digital inputs, terminal actual value / CU DI actual value**

**CU240E-2**

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-</td>
<td>Unsigned32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>-</th>
</tr>
</thead>
</table>

**Units group:**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</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 (p0795.x = 1) to terminal mode (p0795.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 (T. 5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (T. 6)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (T. 7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (T. 8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>
Parameters

Parameter list

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>04</td>
<td>DI 4 (T. 16)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (T. 17)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI 11 (T. 3, 4) Al 0</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>DI 12 (T. 10, 11) Al 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: DI: Digital Input
T: Terminal

r0722.0...11 CO/BO: CU digital inputs, status / CU DI status

CU240B-2
Access level: 2
Can be changed: -
Units group: -
Min
Max
Factory setting

CU240B-2_DP
Calculated: -
Scaling: -
Data type: Unsigned32

CU240E-2
Access level: 2
Can be changed: -
Units group: -
Min
Max
Factory setting

CU240E-2_DP
Calculated: -
Scaling: -
Data type: Unsigned32

CU240E-2_DP_F
CU240E-2_F
CU240E-2_PN_F
CU240E-2_PN
Can be changed: -
Units group: -
Unit selection: -

Description: Displays the status of the digital inputs.

Bit field: Bit Signal name 1 signal 0 signal FP
00 DI 0 (T. 5) High Low -
01 DI 1 (T. 6) High Low -
02 DI 2 (T. 7) High Low -
03 DI 3 (T. 8) High Low -
11 DI 11 (T. 3, 4) Al 0 High Low -
12 DI 12 (T. 10, 11) Al 1 High Low -

Dependency: Refer to: r0723
Note: AI: Analog Input
DI: Digital Input
T: Terminal

r0722.0...12 CO/BO: CU digital inputs, status / CU DI status

CU240E-2
Access level: 2
Can be changed: -
Units group: -
Min
Max
Factory setting

CU240E-2_DP
Calculated: -
Scaling: -
Data type: Unsigned32

CU240E-2_DP_F
CU240E-2_F
CU240E-2_PN_F
CU240E-2_PN
Can be changed: -
Units group: -
Unit selection: -

Description: Displays the status of the digital inputs.

Bit field: Bit Signal name 1 signal 0 signal FP
00 DI 0 (T. 5) High Low -
01 DI 1 (T. 6) High Low -
02 DI 2 (T. 7) High Low -
03 DI 3 (T. 8) High Low -
04 DI 4 (T. 16) High Low -
05 DI 5 (T. 17) High Low -
11 DI 11 (T. 3, 4) Al 0 High Low -
12 DI 12 (T. 10, 11) Al 1 High Low -

Dependency: Refer to: r0723
Note: AI: Analog Input
DI: Digital Input
T: Terminal
r0723.0...11  CO/BO: CU digital inputs, status inverted / CU DI status inv

CU240B-2  Access level: 3  Calculated: -  Data type: Unsigned32
CU240B-2_DP  Can be changed: -  Scaling: -  Data set: -

Units group: -  Unit selection: -

Min    Max    Factory setting
-      -      -

Description: Displays the inverted status of the digital inputs.

Dependency: Refer to: r0722

Note: DI: Digital Input
T: Terminal

Bit field: Bit  Signal name  1 signal  0 signal  FP
00  DI 0 (T. 5)  High  Low  -
01  DI 1 (T. 6)  High  Low  -
02  DI 2 (T. 7)  High  Low  -
03  DI 3 (T. 8)  High  Low  -
11  DI 11 (T. 3, 4) AI 0  High  Low  -

r0723.0...12  CO/BO: CU digital inputs, status inverted / CU DI status inv

CU240E-2  Access level: 3  Calculated: -  Data type: Unsigned32
CU240E-2_DP  Can be changed: -  Scaling: -  Data set: -
CU240E-2_DP_F  Units group: -  Unit selection: -
CU240E-2_F  CU240E-2_PN_F  CU240E-2 PN

Min    Max    Factory setting
-      -      -

Description: Displays the inverted status of the digital inputs.

Dependency: Refer to: r0722

Note: DI: Digital Input
T: Terminal

Bit field: Bit  Signal name  1 signal  0 signal  FP
00  DI 0 (T. 5)  High  Low  -
01  DI 1 (T. 6)  High  Low  -
02  DI 2 (T. 7)  High  Low  -
03  DI 3 (T. 8)  High  Low  -
04  DI 4 (T. 16)  High  Low  -
05  DI 5 (T. 17)  High  Low  -
11  DI 11 (T. 3, 4) AI 0  High  Low  -
12  DI 12 (T. 10, 11) AI 1  High  Low  -

p0724  CU digital inputs debounce time / CU DI t_debounce

Access level: 3  Calculated: -  Data type: FloatingPoint32
Can be changed: U, T  Scaling: -  Data set: -

Units group: -  Unit selection: -

Min    Max    Factory setting
0.000 [ms] 20.000 [ms] 4.000 [ms]

Description: Sets the debounce time for digital inputs.

Note: The digital inputs are read in cyclically every 2 ms (DI 11, DI 12 every 4 ms).
To debounce the signals, the set debounce time is converted into integer multiple debounce clock cycles Tp (Tp = p0724 / 2 ms).
DI: Digital Input
### p0730 \( \text{BI: CU signal source for terminal DO 0 / CU S\_src DO 0} \)

| Access level: 2 | Calculated: - | Data type: U32 / Binary |
| Can be changed: U, T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - | |

**Min** | **Max** | **Factory setting** |
| - | - | 52.3 |

**Description:** Sets the signal source for terminal DO 0 (NO: T. 19 / NC: T. 18).

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

**Note:**
- **DO:** Digital Output
- **T:** Terminal
- Relay output: NO = normally open, NC = normally closed

### p0731 \( \text{BI: CU signal source for terminal DO 1 / CU S\_src DO 1} \)

| CU240E-2 | CU240E-2_DP | CU240E-2_DP_F | CU240E-2_F | CU240E-2_PN_F | CU240E-2 PN |
| Access level: 2 | Calculated: - | Data type: U32 / Binary |
| Can be changed: U, T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - | |

**Min** | **Max** | **Factory setting** |
| - | - | 52.7 |

**Description:** Sets the signal source for terminal DO 1 (NO: T. 21).

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

**Note:**
- **DO:** Digital Output
- **T:** Terminal
- Relay output: NO = normally open, NC = normally closed

### p0732 \( \text{BI: CU signal source for terminal DO 2 / CU S\_src DO 2} \)

| CU240E-2 | CU240E-2_DP | CU240E-2_DP_F | CU240E-2_F | CU240E-2_PN_F | CU240E-2 PN |
| Access level: 2 | Calculated: - | Data type: U32 / Binary |
| Can be changed: U, T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - | |

**Min** | **Max** | **Factory setting** |
| - | - | 52.2 |

**Description:** Sets the signal source for terminal DO 2 (NO: T. 24 / NC: T. 23).

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

**Note:**
- **DO:** Digital Output
- **T:** Terminal
- Relay output: NO = normally open, NC = normally closed

### r0747 \( \text{CU, digital outputs status / CU DO status} \)

| CU240B-2 | CU240B-2_DP |
| Access level: 3 | Calculated: - | Data type: Unsigned32 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - | |

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

**Description:** Displays the status of 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 (NO: T. 19 / NC: T. 18)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>
### Note:
- DO: Digital Output
- T: Terminal
- Relay output: NO = normally open, NC = normally closed
- Inversion using p0748 has been taken into account.

### r0747
**CU, digital outputs status / CU DO status**

<table>
<thead>
<tr>
<th>CU240E-2</th>
<th>CU240E-2_DP</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_F</th>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
<td>Calculated: -</td>
<td>Data type: Unsigned32</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>-</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
<td>Unit selection: -</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>DO 0 (NO: T. 19 / NC: T. 18)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DO 1 (NO: T. 21)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DO 2 (NO: T. 24 / NC: T. 23)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the status of digital outputs.

### p0748
**CU, invert digital outputs / CU DO inv**

<table>
<thead>
<tr>
<th>CU240B-2</th>
<th>CU240B-2_DP</th>
<th><strong>Access level:</strong></th>
<th>3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
<td>Unit selection: -</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>DO 0 (NO: T. 19 / NC: T. 18)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DO 1 (NO: T. 21)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DO 2 (NO: T. 24 / NC: T. 23)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Setting to invert the signals at the digital outputs.

### p0748
**CU, invert digital outputs / CU DO inv**

<table>
<thead>
<tr>
<th>CU240E-2</th>
<th>CU240E-2_DP</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_F</th>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
<td>Calculated: -</td>
<td>Data type: Unsigned32</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Min** | **Max** | **Factory setting**
---|---|---
- | - | 0000 bin

**Description:**
Setting to invert the signals at the digital outputs.
**Parameters**

**Parameter list**

**Note:**
- DO: Digital Output
- T: Terminal
- Relay output: NO = normally open, NC = normally closed

### r0751.0...9
**BO: CU analog inputs status word / CU AI status word**

- **Access level:** 3
- **Can be changed:** -
- **Units group:** -
- **Calculated:** -
- **Scaling:** -
- **Data type:** Unsigned16
- **Data set:** -

**Description:** Displays the status of analog inputs.

<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>Analog input AI0 wire breakage</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Analog input AI1 wire breakage</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Analog input AI0 no wire breakage</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Analog input AI1 no wire breakage</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** AI: Analog Input

### r0752[0...1]
**CO: CU analog inputs input voltage/current actual / CU AI U/I_inp act**

- **Access level:** 2
- **Can be changed:** -
- **Units group:** -
- **Calculated:** -
- **Scaling:** -
- **Data type:** FloatingPoint32
- **Data set:** -

**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] = AI0 (T. 3/4)
- [1] = AI1 (T. 10/11)

**Dependency:** The type of analog input Alx (voltage or current input) is set using p0756. Refer to: p0756

**Note:** AI: Analog Input
- T: Terminal

### p0753[0...1]
**CU analog inputs smoothing time constant / CU AI T_smooth**

- **Access level:** 3
- **Can be changed:** U, T
- **Units group:** -
- **Calculated:** -
- **Scaling:** -
- **Data type:** FloatingPoint32
- **Data set:** -

**Description:** Sets the smoothing time constant of the 1st-order low pass filter for the analog inputs.

**Index:**
- [0] = AI0 (T. 3/4)
- [1] = AI1 (T. 10/11)

**Note:** AI: Analog Input
- T: Terminal
## Parameter list

### Description:
Displays the currently referred input value of the analog inputs. When interconnected, the signals are referred to the reference quantities p200x and p205x.

### Index:

| [0] | AI0 (T. 3/4) |
| [1] | AI1 (T. 10/11) |

### Note:
AI: Analog Input
T: Terminal

### Description:
Sets the type of analog inputs.

- p0756[0...1] = 0, 1, 4 corresponds to a voltage input (r0752, p0757, p0759 are displayed in V).
- p0756[0...1] = 2, 3 corresponds to a current input (r0752, p0757, p0759 are displayed in mA).

In addition, the associated DIP switch must be set.

- For the voltage input, DIP switch AI0/1 must be set to "U".
- For the current input, DIP switch AI0/1 or AI2 must be set to "I".

### Value:

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Unipolar voltage input (0 V ... +10 V)</td>
</tr>
<tr>
<td>1</td>
<td>Unipolar voltage input monitored (+2 V ... +10 V)</td>
</tr>
<tr>
<td>2</td>
<td>Unipolar current input (0 mA ... +20 mA)</td>
</tr>
<tr>
<td>3</td>
<td>Unipolar current input monitored (+4 mA to +20 mA)</td>
</tr>
<tr>
<td>4</td>
<td>Bipolar voltage input (-10 V ... +10 V)</td>
</tr>
<tr>
<td>8</td>
<td>No sensor connected</td>
</tr>
</tbody>
</table>

### Index:

| [0] | AI0 (T. 3/4) |
| [1] | AI1 (T. 10/11) |

### Warning:
The maximum voltage difference between analog input terminals AI+, AI-, and the ground must not exceed 35 V. If the system is operated when the load resistor is switched on (DIP switch set to "I"), the voltage between differential inputs AI+ and AI- must not exceed 10 V or the injected 80 mA current otherwise the input will be damaged.

### Note:
When changing p0756, the parameters of the scaling characteristic (p0757, p0758, p0759, p0760) are overwritten with the following default values:

- For p0756 = 0, 1, 4, p0757 is set to 0.0 V, p0758 = 0.0 %, p0759 = 10.0 V and p0760 = 100.0 %.
- For p0756 = 2, p0757 is set to 0.0 mA, p0758 = 0.0 %, p0759 = 20.0 mA and p0760 = 100.0 %.
- For p0756 = 3, p0757 is set to 4.0 mA, p0758 = 0.0 %, p0759 = 20.0 mA and p0760 = 100.0 %.

### Description:
Sets the scaling characteristic for the analog inputs.

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the x coordinate (V, mA) of the 1st value pair of the characteristic.
Index: [0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

Note: The parameters for the characteristic do not have a limiting effect.

**p0758[0...1]** CU analog inputs characteristic value y1 / CU AI char y1

Access level: 2  
Can be changed: U, T  
Units group: -  

<table>
<thead>
<tr>
<th>Min (y coordinate)</th>
<th>Max (y coordinate)</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1000.00 [%]</td>
<td>1000.00 [%]</td>
<td>0.00 [%]</td>
</tr>
</tbody>
</table>

Description: Sets the scaling characteristic for the analog inputs. The scaling characteristic for the analog inputs is defined using 2 points. This parameter specifies the y coordinate (percentage) of the 1st value pair of the characteristic.

Index: [0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

Note: The parameters for the characteristic do not have a limiting effect.

**p0759[0...1]** CU analog inputs characteristic value x2 / CU AI char x2

Access level: 2  
Can be changed: U, T  
Units group: -  

<table>
<thead>
<tr>
<th>Min (x coordinate)</th>
<th>Max (x coordinate)</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-50.000</td>
<td>160.000</td>
<td>10.000</td>
</tr>
</tbody>
</table>

Description: Sets the scaling characteristic for the analog inputs. The scaling characteristic for the analog inputs is defined using 2 points. This parameter specifies the x coordinate (V, mA) of the 2nd value pair of the characteristic.

Index: [0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

Note: The parameters for the characteristic do not have a limiting effect.

**p0760[0...1]** CU analog inputs characteristic value y2 / CU AI char y2

Access level: 2  
Can be changed: U, T  
Units group: -  

<table>
<thead>
<tr>
<th>Min (y coordinate)</th>
<th>Max (y coordinate)</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1000.00 [%]</td>
<td>1000.00 [%]</td>
<td>100.00 [%]</td>
</tr>
</tbody>
</table>

Description: Sets the scaling characteristic for the analog inputs. 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] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)

Note: The parameters for the characteristic do not have a limiting effect.

**p0761[0...1]** CU analog inputs wire breakage monitoring response threshold / CU WireBrkThresh

Access level: 2  
Can be changed: U, T  
Units group: -  

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>20.00</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Description: Sets the response threshold for the wire breakage monitoring of the analog inputs. The unit for the parameter value depends on the set analog input type.
### Parameter list

**Index:**
- [0] = AI0 (T. 3/4)
- [1] = AI1 (T. 10/11)

**Dependency:**
For the following analog input type, the wire breakage monitoring is active:
- p0756[0...1] = 1 (unipolar voltage input monitored (+2 V ... +10 V)), unit [V]
- p0756[0...1] = 3 (unipolar current input monitored (+4 mA ... +20 mA)), unit [mA]

Refer to: p0756

**Note:**
AI: Analog Input
When p0761 = 0, wire breakage monitoring is not carried out.

### p0762[0...1] CU analog inputs wire breakage monitoring delay time / CU wire brk t_del

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
<td></td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[0] = AI0 (T. 3/4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[1] = AI1 (T. 10/11)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the delay time for the wire breakage monitoring of the analog inputs.</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>AI: Analog Input</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Min</strong></td>
<td>0 [ms]</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>1000 [ms]</td>
<td></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>100 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

### p0771[0...1] CI: CU analog outputs signal source / CU AO S_src

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
<td></td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[0] = AO0 (T 12/13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[1] = AO1 (T 26/27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source for the analog outputs.</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>AO: Analog Output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T: Terminal</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>[0] 21[0]</td>
<td>[1] 27[0]</td>
</tr>
</tbody>
</table>

### r0772[0...1] CU analog outputs, output value currently referred / CU AO outp_val

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[0] = AO0 (T 12/13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[1] = AO1 (T 26/27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Displays the actual referred output value of the analog outputs.</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>AO: Analog Output</td>
<td></td>
</tr>
<tr>
<td></td>
<td>T: Terminal</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Min</strong></td>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p0773[0...1] CU analog outputs smoothing time constant / CU AO T_smooth

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
<td></td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[0] = AO0 (T 12/13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[1] = AO1 (T 26/27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the smoothing time constant of the 1st-order low pass filter for the analog outputs.</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Min</strong></td>
<td>0.0 [ms]</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>1000.0 [ms]</td>
<td></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>0.0 [ms]</td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

| Index: | 0 = AO0 (T 12/13)  
|        | 1 = AO1 (T 26/27)  |
| **Note:** | AO: Analog Output  
|          | T: Terminal |

#### r0774[0...1]

**CU analog outputs output voltage/current actual / CU AO U/I_outp**

- **Access level:** 2
- **Can be changed:** -
- **Units group:** -
- **Data type:** FloatingPoint32
- **Scaling:** p2001
- **Data set:** -
- **Factory setting:** -

<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 output voltage or output current at the analog outputs.

**Index:**
- [0] = AO0 (T 12/13)
- [1] = AO1 (T 26/27)

**Dependency:**
Refer to: p0776

**Note:**
AO: Analog Output  
T: Terminal

#### p0775[0...1]

**CU analog outputs activate absolute value generation / CU AO absVal act**

- **Access level:** 2
- **Can be changed:** T
- **Units group:** -
- **Data type:** Integer16
- **Scaling:** -
- **Data set:** -
- **Factory setting:** 0

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Activates the absolute value generation for the analog outputs.

**Value:**
0: No absolute value generation  
1: Absolute value generation switched in

**Index:**
- [0] = AO0 (T 12/13)
- [1] = AO1 (T 26/27)

**Note:**
AO: Analog Output  
T: Terminal

#### p0776[0...1]

**CU analog outputs type / CU AO type**

- **Access level:** 2
- **Can be changed:** U, T
- **Units group:** -
- **Data type:** Integer16
- **Scaling:** -
- **Data set:** -
- **Factory setting:** 0

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the analog output type.

- p0776[x] = 1 corresponds to a voltage output (p0774, p0778, p0780 are displayed in V).
- p0776[x] = 0, 2 corresponds to a current output (p0774, p0778, p0780 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)

**Index:**
- [0] = AO0 (T 12/13)
- [1] = AO1 (T 26/27)

**Note:**
When changing p0776, the parameters of the scaling characteristic (p0777, p0778, p0779, p0780) are overwritten with the following default values:
For p0776 = 0, p0777 is set to 0.0 %, p0778 = 0.0 mA, p0779 = 100.0 % and p0780 to 20.0 mA.  
For p0776 = 1, p0777 is set to 0.0 %, p0778 = 0.0 V, p0779 = 100.0 % and p0780 to 10.0 V.  
For p0776 = 2, p0777 is set to 0.0 %, p0778 = 4.0 mA, p0779 = 100.0 % and p0780 to 20.0 mA.
### p0777[0...1] CU analog outputs characteristic value x1 / CU AO char x1

<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>x1</td>
<td>Sets the scaling characteristic for the analog outputs. 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.</td>
<td>[0] = AO0 (T 12/13) [1] = AO1 (T 28/27)</td>
<td>Refer to: p0776</td>
<td>This parameter is automatically overwritten when changing p0776 (type of analog outputs).</td>
<td>The parameters for the characteristic do not have a limiting effect.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>-1000.00 [%]</td>
<td>1000.00 [%]</td>
<td></td>
</tr>
<tr>
<td>Factory setting:</td>
<td>0.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>

### p0778[0...1] CU analog outputs characteristic value y1 / CU char y1

<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>y1</td>
<td>Sets the scaling characteristic for the analog outputs. 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.</td>
<td>[0] = AO0 (T 12/13) [1] = AO1 (T 28/27)</td>
<td>Refer to: p0776</td>
<td>This parameter is automatically overwritten when changing p0776 (type of analog outputs).</td>
<td>The parameters for the characteristic do not have a limiting effect.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>-20.000 [V]</td>
<td>20.000 [V]</td>
<td></td>
</tr>
<tr>
<td>Factory setting:</td>
<td>0.000 [V]</td>
<td></td>
</tr>
</tbody>
</table>

### p0779[0...1] CU analog outputs characteristic value x2 / CU char x2

<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>x2</td>
<td>Sets the scaling characteristic for the analog outputs. The scaling characteristic for the analog outputs is defined using 2 points. This parameter specifies the x coordinate (percentage) of the 2nd value pair of the characteristic.</td>
<td>[0] = AO0 (T 12/13) [1] = AO1 (T 28/27)</td>
<td>Refer to: p0776</td>
<td>This parameter is automatically overwritten when changing p0776 (type of analog outputs).</td>
<td>The parameters for the characteristic do not have a limiting effect.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>-1000.00 [%]</td>
<td>1000.00 [%]</td>
<td></td>
</tr>
<tr>
<td>Factory setting:</td>
<td>100.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>
**Parameters**

**Parameter list**

<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>p0780[0...1]</td>
<td>CU analog outputs characteristic value y2 / CU char y2</td>
<td></td>
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<td></td>
<td>Access level: 2</td>
<td>Calculated: -</td>
<td>Data type: FloatingPoint32</td>
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<td></td>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
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<tr>
<td></td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td></td>
<td>Sets the scaling characteristic for the analog outputs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The scaling characteristic for the analog outputs is defined using 2 points.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This parameter specifies the y coordinate (output voltage in V or output current in mA) of the 2nd value pair of the characteristic.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Index: [0] = AO0 (T 12/13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[1] = AO1 (T 26/27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Dependency: The unit of this parameter (V or mA) depends on the analog output type. Refer to: p0776</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Notice: This parameter is automatically overwritten when changing p0776 (type of analog outputs).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Note: The parameters for the characteristic do not have a limiting effect.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0782[0...1]</td>
<td>BI: CU analog outputs invert signal source / CU AO inv S_src</td>
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<tr>
<td></td>
<td>Access level: 3</td>
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</tr>
<tr>
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<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
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</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td>Unit selection: -</td>
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</tr>
<tr>
<td></td>
<td>Min: -</td>
<td>Max: 0</td>
<td>Factory setting: 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td></td>
<td>Sets the signal source to invert the analog output signals.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Index: [0] = AO0 (T 12/13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[1] = AO1 (T 26/27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Note: AO: Analog Output</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>T: Terminal</td>
<td></td>
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</tr>
<tr>
<td>r0785.0...1</td>
<td>BO: CU analog outputs status word / CU AO ZSW</td>
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<td></td>
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<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
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<tr>
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<td>Unit selection: -</td>
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<td></td>
<td></td>
</tr>
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<td>Max: -</td>
<td>Factory setting: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td></td>
<td>Displays the status of analog outputs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bit field:</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bit</td>
<td>Signal name</td>
<td>1 signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>00</td>
<td>AO 0 negative</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>01</td>
<td>AO 1 negative</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Note: AO: Analog Output</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0795</td>
<td>CU digital inputs simulation mode / CU DI simulation</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>CU240B-2</td>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Unsigned32</td>
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</tr>
<tr>
<td></td>
<td>CU240B-2_DP</td>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
</tr>
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<td></td>
<td>Units group: -</td>
<td>Unit selection: -</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min: -</td>
<td>Max: 0000 0000 0000 0000 bin</td>
<td>Factory setting: 0000 0000 0000 0000 bin</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td></td>
<td>Sets the simulation mode for digital inputs.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bit field:</td>
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<td></td>
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<td></td>
<td>Bit</td>
<td>Signal name</td>
<td>1 signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>00</td>
<td>DI 0 (T. 5)</td>
<td>Simulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>01</td>
<td>DI 1 (T. 6)</td>
<td>Simulation</td>
</tr>
</tbody>
</table>
### Parameter list

#### 02 DI 2 (T. 7) Simulation Terminal eval -
#### 03 DI 3 (T. 8) Simulation Terminal eval -
#### 11 DI 11 (T. 3, 4) AI 0 Simulation Terminal eval -

**Dependency:**
The setpoint for the input signals is specified using p0796.
Refer to: p0796

**Note:**
This parameter is not saved when data is backed up (p0971).

**DI:** Digital Input

**T:** Terminal

---

### p0795

**CU digital inputs simulation mode / CU DI simulation**

<table>
<thead>
<tr>
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<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP</td>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
</tbody>
</table>

**Units group:** -

**Unit selection:** -

**Min** | **Max** | **Factory setting**
--- | --- | ---
- | - | 0000 0000 0000 0000 bin

**Description:**
Sets the simulation mode for digital inputs.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (T. 5)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (T. 6)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (T. 7)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (T. 8)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI 4 (T. 16)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (T. 17)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI 11 (T. 3, 4) AI 0</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>DI 12 (T. 10, 11) AI 1</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
The setpoint for the input signals is specified using p0796.
Refer to: p0796

**Note:**
This parameter is not saved when data is backed up (p0971).

**DI:** Digital Input

**T:** Terminal

---

### p0796

**CU digital inputs simulation mode setpoint / CU DI simul setp**

<table>
<thead>
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</thead>
<tbody>
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<td>CU240B-2_DP</td>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
</tbody>
</table>

**Units group:** -

**Unit selection:** -

**Min** | **Max** | **Factory setting**
--- | --- | ---
- | - | 0000 0000 0000 0000 bin

**Description:**
Sets the setpoint for the input signals in the digital input simulation mode.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (T. 5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (T. 6)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (T. 7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (T. 8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI 11 (T. 3, 4) AI 0</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
The simulation of a digital input is selected using p0795.
Refer to: p0795

**Note:**
This parameter is not saved when data is backed up (p0971).

**AI:** Analog Input

**DI:** Digital Input

**T:** Terminal
**Parameters**

**Parameter list**

### p0796

**CU digital inputs simulation mode setpoint / CU DI simul setp**

- **CU240E-2**
- **CU240E-2_DP**
- **CU240E-2_DP_F**
- **CU240E-2_F**
- **CU240E-2_PN_F**
- **CU240E-2 PN**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (T. 5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
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<tr>
<td>01</td>
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<td>-</td>
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</tr>
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<tr>
<td>11</td>
<td>DI 11 (T. 3, 4) AI 0</td>
<td>High</td>
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<td>-</td>
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</tr>
<tr>
<td>12</td>
<td>DI 12 (T. 10, 11) AI 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the setpoint for the input signals in the digital input simulation mode.

**Dependency:**
The simulation of a digital input is selected using p0795.

**Note:**
This parameter is not saved when data is backed up (p0971).

**AI:** Analog Input

**DI:** Digital Input

**T:** Terminal

### p0797[0...1]

**CU analog inputs simulation mode / CU AI sim_mode**

- **Access level:** 3
- **Can be changed:** U, T
- **Units group:** -

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>AI 0 (T. 3/4)</td>
<td>Terminal evaluation for analog input x</td>
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<td></td>
</tr>
<tr>
<td>11</td>
<td>AI 1 (T. 10/11)</td>
<td>Simulation for analog input x</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the simulation mode for the analog inputs.

**Index:**
0: Terminal evaluation for analog input x
1: Simulation for analog input x

**Dependency:**
The setpoint for the input voltage is specified via p0798.

**Note:**
This parameter is not saved when data is backed up (p0971).

**AI:** Analog Input

### p0798[0...1]

**CU analog inputs simulation mode setpoint / CU AI sim setp**

- **Access level:** 3
- **Can be changed:** U, T
- **Units group:** -

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>AI 0 (T. 3/4)</td>
<td>-50.000</td>
<td>2000.000</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>AI 1 (T. 10/11)</td>
<td>-50.000</td>
<td>2000.000</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the setpoint for the input value in the simulation mode of the analog inputs.

**Index:**
0: AI 0 (T. 3/4)
1: AI 1 (T. 10/11)
Dependency: The simulation of an analog input is selected using p0797.
If AI x is parameterized as a voltage input (p0756), the setpoint is a voltage in V.
If AI x is parameterized as a current input (p0756), the setpoint is a current in mA.
Refer to: p0756, p0797
Note: This parameter is not saved when data is backed up (p0971).
AI: Analog Input

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

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Can be changed: T</th>
<th>Units group: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
</table>

Description: Sets the number for data transfer of a parameter backup from/to memory card.
Transfer from memory card to device memory (p0804 = 1):
- Sets the source of parameter backup (e.g. p0802 = 48 --> PS048xxx.ACX is the source).
Transfer from non-volatile device memory to memory card (p0804 = 2):
- Sets the target of parameter backup (e.g. p0802 = 23 --> PS023xxx.ACX is the target).

Dependency: Refer to: p0803, 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).

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

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Can be changed: T</th>
<th>Units group: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
</table>

Description: Sets the number for data transfer of a parameter backup from/to device memory.
Transfer from memory card to device memory (p0804 = 1):
- Sets the target of the parameter backup (e.g. p0803 = 10 --> PS010xxx.ACX is the target).
Transfer from non-volatile device memory to memory card (p0804 = 2):
- Sets the source of the parameter backup (e.g. p0803 = 11 --> PS011xxx.ACX is the source).

Value: 0: Source/target standard
10: Source/target with setting 10
11: Source/target with setting 11
12: Source/target with setting 12

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).

**p0804** Data transfer start / Data transf start

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Can be changed: T</th>
<th>Units group: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
</table>

Description: Sets the transfer direction and start of data transfer between the memory card and non-volatile device memory.
Parameters

Parameter list

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.

Example 3 (only supported for PROFIBUS/PROFINET):
The PROFIBUS or PROFINET device master data (GSD) should be transferred from the device memory to the memory card.
p0802 = (not relevant)
p0803 = (not relevant)
p0804 = 12 (start transferring the GSD files to the memory card)
--> The GSD files are transferred from the device memory to the memory card and stored in the /SIEMENS/SINAMICS/DATA/CFG directory.

Value:
0: Inactive
1: Memory card to device memory
2: Device memory to memory card
12: Device memory (GSD files) 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.
For p0014 = 1, 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:
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 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.
**Description:**
Sets the transfer direction and start of data transfer between the memory card and non-volatile device memory.

**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.

\[
\begin{align*}
p0802 &= 22 \quad (\text{parameter backup stored on memory card as target with setting } 22) \\
p0803 &= 0 \quad (\text{parameter backup stored in device memory as source with setting } 0) \\
p0804 &= 2 \quad (\text{start data transfer from device memory to memory card})
\end{align*}
\]

--> 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.

\[
\begin{align*}
p0802 &= 22 \quad (\text{parameter backup stored on memory card as source with setting } 22) \\
p0803 &= 0 \quad (\text{parameter backup stored in device memory as target with setting } 0) \\
p0804 &= 1 \quad (\text{start data transfer from memory card to device memory})
\end{align*}
\]

--> PS022xxx.ACX is transferred from memory card to device memory and stored as PS000xxx.ACX.

**Example 3 (only supported for PROFIBUS/PROFINET):**
The PROFIBUS or PROFINET device master data (GSD) should be transferred from the device memory to the memory card.

\[
\begin{align*}
p0802 &= (\text{not relevant}) \\
p0803 &= (\text{not relevant}) \\
p0804 &= 12 \quad (\text{start transferring the GSD files to the memory card})
\end{align*}
\]

--> The GSD files are transferred from the device memory to the memory card and stored in the /SIEMENS/SINAMICS/DATA/CFG directory.

**Value:**

0: Inactive
1: Memory card to device memory
2: Device memory to memory card

**Dependency:**
Refer to: p0802, p0803

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

For p0014 = 1, 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:**
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:

\[
\begin{align*}
p0804 &= 1001: \\
&\quad \text{The parameter backup set in p0802 as the source on the memory card does not exist or there is not sufficient memory space available on the memory card.}
\end{align*}
\]

\[
\begin{align*}
p0804 &= 1002: \\
&\quad \text{The parameter backup set in p0803 as the source in the device memory does not exist or there is not sufficient memory space available in the device memory.}
\end{align*}
\]
p0804 = 1003:
No memory card has been inserted.

**p0806**  
**BI: Inhibit master control / PcCtrl inhibit**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Values</th>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>Max</td>
<td>3</td>
<td>-</td>
<td>U32 / Binary</td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: r0807</td>
<td>Note:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>The commissioning software (drive control panel) uses the master control, for example.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**r0807.0**  
**BO: Master control active / PcCtrl active**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Values</th>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>Max</td>
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<td>-</td>
<td>Unsigned8</td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: p0806</td>
<td>Notice:</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>
<tr>
<td>Note:</td>
<td>Bit 0 = 0: BICO interconnection active</td>
<td>Bit 0 = 1: Master control for PC/AOP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>The commissioning software (drive control panel) uses the master control, for example.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p0809[0...2]**  
**Copy Command Data Set CDS / Copy CDS**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Values</th>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>Max</td>
<td>2</td>
<td>-</td>
<td>Unsigned8</td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: r3996</td>
<td>Notice:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notice:</td>
<td>When the command data sets are copied, short-term communication interruptions may occur.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>Procedure:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure:</td>
<td>1. In Index 0, enter which command data set should be copied.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure:</td>
<td>2. In Index 1, enter the command data set that is to be copied into.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure:</td>
<td>3. Start copying: Set index 2 from 0 to 1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>p0809[2] is automatically set to 0 when copying is completed.</td>
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p0810  
**BI: Command data set selection CDS bit 0 / CDS select., bit 0**

<table>
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<td>U32 / Binary</td>
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<table>
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<table>
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</thead>
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<td>-</td>
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</tbody>
</table>

<table>
<thead>
<tr>
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<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>722.3</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source to select the Command Data Set bit 0 (CDS bit 0).

**Dependency:**
Refer to: r0050, p0811, r0836

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

**Note:**
The Command Data Set selected using the binector inputs is displayed in r0836.
The currently effective command data set is displayed in r0050.
A Command Data Set can be copied using p0809.

---

p0811  
**BI: Command data set selection CDS bit 1 / CDS select., bit 1**

<table>
<thead>
<tr>
<th>Access level</th>
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</tr>
</thead>
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<td>U32 / Binary</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
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<tr>
<td>T</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
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</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
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</tbody>
</table>

**Description:**
Sets the signal source to select the Command Data Set bit 1 (CDS bit 1).

**Dependency:**
Refer to: r0050, p0811, r0836

**Note:**
The Command Data Set selected using the binector inputs is displayed in r0836.
The currently effective command data set is displayed in r0050.
A Command Data Set can be copied using p0809.

---

p0819[0...2]  
**Copy Drive Data Set DDS / Copy DDS**

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-</td>
<td>Unsigned8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
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</thead>
<tbody>
<tr>
<td>C(15)</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
</tr>
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<tbody>
<tr>
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<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>0</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

**Dependency:**
Refer to: r3996
Notice: When the drive data sets are copied, short-term communication interruptions may occur.

Note: 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.

Description:
- **Sets the signal source to select the Drive Data Set, bit 0 (DDS, bit 0).**
  
- **Sets the signal source to select the Drive Data Set, bit 1 (DDS, bit 1).**

Dependency:
- Refer to: r0051, p0826, r0837

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

Description:
- **Sets the freely-assignable motor number for the drive data set changeover.**
  
- If the same motor is driven by different drive data sets, the same motor number must also be entered in these data sets.

Note:
- If the motor is also switched with the drive data set, different motor numbers must be used. In this case, the data set can only be switched when the pulse inhibit is set.
- If the motor numbers are identical, the same thermal motor model is used for calculation after data set changeover.
- If different motor numbers are used, different models are also used for calculating (the inactive motor cools down in each case).
- For the same motor number, the correction values of the Rs, Lh or kT adaptation are applied for the data set changeover (refer to r1782, r1787, r1797).

Description:
- Displays the status word for the drive data set changeover.
### Parameter List

#### 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>02</td>
<td>Internal parameter calculation active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Armature short circuit active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Identification running</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Rotating measurement running</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Motor data identification running</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**

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

Re bit 04:
A data set changeover is only carried out when the armature short circuit is not activated.

Re bit 05:
A data set changeover is only carried out when pole position identification is not running.

Re bit 07:
A data set changeover is only carried out when rotating measurement is not running.

Re bit 08:
A data set changeover is only carried out when motor data identification is not running.

### Description:
Displays the command data set (CDS) selected via the binector input.

### Dependency:
Refer to: r0050, p0810, p0811

### Note:
Command data sets are selected via binector input p0810 and following.
The currently effective command data set is displayed in r0050.

### 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>CDS select. bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>CDS select. bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

### Description:
Displays the drive data set (DDS) selected via the binector input.

### Dependency:
Refer to: r0051, p0820, p0821

### Note:
Drive data sets are selected via binector input p0820 and following.
The currently effective drive data set is displayed in r0051.

If there is only one data set, then a value of 0 is displayed in this parameter and not the selection via binector inputs.
**Description:** Sets the signal source for the command "ON/OFF (OFF1)". For the PROFIdrive profile, this command corresponds to control word 1 bit 0 (STW1.0).

**Dependency:** Refer to: p1055, p1056

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

**Notice:**
- For binector input p0840 = 0 signal, the motor can be moved, jogging using binector input p1055 or p1056.
- For drives with closed-loop speed control (p1300 = 20), the following applies:
  - BI: p0840 = 0 signal: OFF1 (braking with the ramp-function generator, then pulse suppression and switch-on inhibit)
  - BI: p0840 = 0 signal: immediate pulse suppression
  - BI: p0840 = 0 signal: NO dedicated braking response, but pulse cancelation when standstill is detected (p1226, p1227)
- For drives with closed-loop speed/torque control, the following applies:
  - BI: p0840 = 0/1 signal: ON (pulses can be enabled)

---

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0840[0...n]</td>
<td>BI: ON / OFF (OFF1) / ON / OFF (OFF1)</td>
<td>3</td>
<td>-</td>
<td>U32 / Binary</td>
<td>T</td>
<td>-</td>
<td>CDS, p0170</td>
<td></td>
<td></td>
</tr>
<tr>
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<td>[0] 2090.0</td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>[1] 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>[2] 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[3] 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Description:** Sets the signal source for the command "ON/OFF (OFF1)". For the PROFIdrive profile, this command corresponds to control word 1 bit 0 (STW1.0).

**Dependency:** Refer to: p1055, p1056

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

**Notice:**
- For binector input p0840 = 0 signal, the motor can be moved, jogging using binector input p1055 or p1056.
- The command "ON/OFF (OFF1)" can be issued using binector input p0840 or p1055/p1056.
- For binector input p0840 = 0 signal, the switch-on inhibit is acknowledged.
- Only the signal source that originally powered up can also power down again.
- The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:**
- For drives with closed-loop speed control (p1300 = 20), 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 (p1300 = 22), the following applies:
  - BI: p0840 = 0 signal: immediate pulse suppression
- For drives with closed-loop torque control (activated using p1501), the following applies:
  - BI: p0840 = 0 signal: NO dedicated braking response, but pulse cancelation when standstill is detected (p1226, p1227)
- For drives with closed-loop speed/torque control, the following applies:
  - BI: p0840 = 0/1 signal: ON (pulses can be enabled)
Only the signal source that originally powered up can also power down again.
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:**
For drives with closed-loop speed control (p1300 = 20), 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 (p1300 = 22), the following applies:
- BI: p0840 = 0 signal: immediate pulse suppression
For drives with closed-loop torque control (activated using p1501), the following applies:
- BI: p0840 = 0 signal: No dedicated braking response, but pulse cancelation when standstill is detected (p1226, p1227)
For drives with closed-loop speed/torque control, the following applies:
- BI: p0840 = 0/1 signal: ON (pulses can be enabled)

### p0844[0...n] BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **CU240B-2** | Sets the first signal source for the command "No coast down/coast down (OFF2)". The following signals are AND'ed:  
- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"  
- BI: p0845 "No coast-down / coast-down (OFF2) signal source 2"  
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).  
BI: p0844 = 0 signal or BI: p0845 = 0 signal  
- OFF2 (immediate pulse suppression and switch on inhibit)  
BI: p0844 = 1 signal and BI: p0845 = 1 signal  
- No OFF2 (enable is possible) |
| **CU240E-2** | Caution:  
When "master control from PC" is activated, this binector input is ineffective. |
| **CU240E-2_F** | Notice:  
The parameter may be protected as a result of p0922 or p2079 and cannot be changed. |
| **CU240E-2_PN_F** |  |
| **CU240E-2 PN** |  |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>[0] 2090.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] 1</td>
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<tr>
<td></td>
<td></td>
<td>[2] 2090.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[3] 2090.1</td>
</tr>
</tbody>
</table>

### p0844[0...n] BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **CU240B-2** | Sets the first signal source for the command "No coast down/coast down (OFF2)". The following signals are AND'ed:  
- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"  
- BI: p0845 "No coast-down / coast-down (OFF2) signal source 2"  
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).  
BI: p0844 = 0 signal or BI: p0845 = 0 signal  
- OFF2 (immediate pulse suppression and switch on inhibit) |
| **CU240E-2** |  |
| **CU240E-2_F** |  |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
### p0845[0...n] BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -
- **Max:** 1
- **Factory setting:** 1

**Description:**
Sets the second signal source for the command "No coast down/coast down (OFF2)".

The following signals are AND’ed:
- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"
- BI: p0845 "No coast-down / coast-down (OFF2) signal source 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).

- BI: p0844 = 1 signal or BI: p0845 = 1 signal

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.

### p0848[0...n] BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -
- **Max:** 1
- **Factory setting:**
  - [0] 2090.2
  - [1] 1
  - [2] 2090.2
  - [3] 2090.2

**Description:**
Sets the first signal source for the command "No quick stop/quick stop (OFF3)".

The following signals are AND’ed:
- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).

- BI: p0848 = 1 signal or BI: p0849 = 1 signal

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.
Description:
Sets the first signal source for the command "No quick stop/quick stop (OFF3)". The following signals are AND’ed:
- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).
BI: p0848 = 0 signal or BI: p0849 = 0 signal
- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switch on inhibit)
BI: p0848 = 1 signal and BI: p0849 = 1 signal
- No OFF3 (enable is possible)

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

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

Description:
Sets the second signal source for the command "No quick stop/quick stop (OFF3)". The following signals are AND’ed:
- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).
BI: p0848 = 0 signal or BI: p0849 = 0 signal
- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switch on inhibit)
BI: p0848 = 1 signal and BI: p0849 = 1 signal
- No OFF3 (enable is possible)

Caution:
When "master control from PC" is activated, this binector input is effective.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0852[n]</td>
<td>BI: Enable operation/inhibit operation / Operation enable</td>
<td>3</td>
<td>-</td>
<td>U32 / Binary</td>
<td>T</td>
<td>-</td>
<td>CDS, p0170</td>
</tr>
</tbody>
</table>

**CU240B-2\_DP**

**CU240E-2\_DP**

**CU240E-2\_DP\_F**

**CU240E-2\_PN\_F**

**CU240E-2 PN**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>[0] 2090.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[2] 2090.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[3] 2090.3</td>
</tr>
</tbody>
</table>

**CU240B-2**

**CU240E-2**

**CU240E-2\_F**

**CU240E-2\_PN\_F**

**CU240E-2 PN**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the command "enable operation/inhibit operation". For the PROFIdrive profile, this command corresponds to control word 1 bit 3 (STW1.3).

BI: p0852 = 0 signal

Inhibit operation (suppress pulses).

BI: p0852 = 1 signal

Enable operation (pulses can be enabled).

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

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

---

**Description:** Sets the signal source for the command "enable operation/inhibit operation". For the PROFIdrive profile, this command corresponds to control word 1 bit 3 (STW1.3).

BI: p0852 = 0 signal

Inhibit operation (suppress pulses).

BI: p0852 = 1 signal

Enable operation (pulses can be enabled).

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

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

**p0854[0...n]**  
**BI: Control by PLC/no control by PLC / Master ctrl by PLC**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240B-2</td>
<td>Sets the signal source for the command &quot;control by PLC/no control by PLC&quot;.</td>
<td>-</td>
<td>-</td>
<td>[0] 2090.10</td>
</tr>
<tr>
<td>CU240E-2</td>
<td>For the PROFIdrive profile, this command corresponds to control word 1 bit 10 (STW1.10).</td>
<td>-</td>
<td>-</td>
<td>[1] 1</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>BI: p0854 = 0 signal</td>
<td>-</td>
<td>-</td>
<td>[2] 2090.10</td>
</tr>
<tr>
<td>CU240E-2_PN</td>
<td>No control by PLC</td>
<td>-</td>
<td>-</td>
<td>[3] 2090.10</td>
</tr>
</tbody>
</table>

**Access level:** 3  
**Can be changed:** T  
**Units group:** -  
**Calculated:** -  
**Scaling:** -  
**Data type:** U32 / Binary  
**Data set:** CDS, p0170  
**Can be changed:** T  
**Scaling:** -  
**Data set:** CDS, p0170  

**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).
## Parameters

### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level:</th>
<th>Can be changed:</th>
<th>Units group:</th>
<th>Calculated:</th>
<th>Data type:</th>
<th>Data set:</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0855[0...n]</td>
<td><strong>BI: Unconditionally release holding brake / Uncond open brake</strong>&lt;br&gt; Sets the signal source for the command &quot;unconditionally open holding brake&quot;.</td>
<td>3</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>U32 / Binary</td>
<td>CDS, p0170</td>
<td>-</td>
</tr>
<tr>
<td>p0856[0...n]</td>
<td><strong>BI: Speed controller enable / n_ctrl enable</strong>&lt;br&gt; Sets the signal source for the command &quot;enable speed controller&quot; (r0898.12).&lt;br&gt; 0 signal: Set the I component and speed controller output to zero.&lt;br&gt; 1 signal: Enable speed controller.</td>
<td>3</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>U32 / Binary</td>
<td>CDS, p0170</td>
<td>1</td>
</tr>
<tr>
<td>p0857</td>
<td><strong>Power unit monitoring time / PU t_monit</strong>&lt;br&gt; Sets the monitoring time for the power unit.&lt;br&gt; The monitoring time is started after an 0/1 edge of the ON/OFF1 command. If the power unit does not return a READY signal within the monitoring time, fault F07802 is output.</td>
<td>3</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>10000.0 [ms]</td>
</tr>
<tr>
<td>p0858[0...n]</td>
<td><strong>BI: Unconditionally close holding brake / Uncond close brake</strong>&lt;br&gt; Sets the signal source for the command &quot;unconditionally close holding brake&quot;.</td>
<td>3</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>U32 / Binary</td>
<td>CDS, p0170</td>
<td>0</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.

p0897  BI: Parking axis selection / Parking axis sel

Access level: 2  Calculated: -  Data type: U32 / Binary
Can be changed: T  Scaling: -  Data set: -
Units group: -  Unit selection: -

<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 to select the "parking axis" function.

Dependency: BI: p0897 = 0 signal

The function "parking axis" is not selected.

BI: p0897 = 1 signal

The function "parking axis" is selected.

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

Note: After it has been selected the "parking axis" function only becomes active when the pulses are suppressed.

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

Access level: 2  Calculated: -  Data type: Unsigned16
Can be changed: -  Scaling: -  Data set: -
Units group: -  Unit selection: -

<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 control word of the sequence control.

Bit field:  Bit  Signal name  1 signal  0 signal  FP

| 00 | ON/OFF1  Yes | No |
| 01 | OC / OFF2  Yes | No |
| 02 | OC / OFF3  Yes | No |
| 03 | Operation enable  Yes | No |
| 04 | Ramp-function generator enable  Yes | No |
| 05 | Continue ramp-function generator  Yes | No |
| 06 | Speed setpoint enable  Yes | No |
| 07 | Command open brake  Yes | No |
| 08 | Jog 1  Yes | No |
| 09 | Jog 2  Yes | No |
| 10 | Master ctrl by PLC  Yes | No |
| 12 | Speed controller enable  Yes | No |
| 14 | Command close brake  Yes | No |

Note: OC: Operating condition

Re bit 10:

If p0700 = 2 is set, bit 10 always shows "1".

r0899.0...13  CO/BO: Status word sequence control / ZSW seq_ctrl

Access level: 2  Calculated: -  Data type: Unsigned16
Can be changed: -  Scaling: -  Data set: -
Units group: -  Unit selection: -

<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 status word of the sequence control.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>Rdy for switch on</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>Ready</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>Operation enabled</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>Jog active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>04</td>
<td>No coasting active</td>
<td>OFF2 inactive</td>
<td>OFF2 active</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>05</td>
<td>No Quick Stop active</td>
<td>OFF3 inactive</td>
<td>OFF3 active</td>
<td>-</td>
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<tr>
<td></td>
<td>06</td>
<td>Switching on inhibited active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
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<td></td>
<td>07</td>
<td>Drive ready</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>08</td>
<td>Controller enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
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<td></td>
<td>09</td>
<td>Control request</td>
<td>Yes</td>
<td>No</td>
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<td>10</td>
<td>Controller enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
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<td></td>
<td>11</td>
<td>Pulses enabled</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
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<tr>
<td></td>
<td>12</td>
<td>Open holding brake</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Command close holding brake</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**

Re bits 00, 01, 02, 04, 05, 06, 09:

For PROFIdrive, these signals are used for status word 1.

#### p0918 PROFIBUS address / PB address

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
</tbody>
</table>

**Description:**
Displays or sets the PROFIBUS address for PROFIbus interface on the Control Unit.

The address can be set as follows:

1) Using the DIP switch on the Control Unit.

--> p0918 can then only be read and displays the selected address.

--> A change only becomes effective after a POWER ON.

2) Using p0918

--> Only if all of the DIP switches are set to ON or OFF.

--> 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.

**Notice:**

For p0014 = 1, 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.

For p0014 = 0, the following applies:

Before a changed setting becomes permanently effective, a non-volatile RAM to ROM data save is required. To do this, set p0971 = 1 or p0014 = 1.

**Note:**

Permissible PROFIBUS addresses: 1 ... 126

Address 126 is used for commissioning.

Every PROFIBUS address change only becomes effective after a POWER ON.

#### p0922 PROFIdrive telegram selection / PD Telegr_sel

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
</tbody>
</table>

**Description:**

Sets the send and receive telegram.

**Value:**

1: Standard telegram 1, PZD-2/2
20: Standard telegram 20, PZD-2/6
350: SIEMENS telegram 350, PZD-4/4
352: SIEMENS telegram 352, PZD-6/6
353: SIEMENS telegram 353, PZD-2/2, PKW-4/4
354: SIEMENS telegram 354, PZD-6/6, PKW-4/4
999: Free telegram configuration with BICO

Dependency: Refer to: F01505

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.
The inhibited interconnections can only be changed again after setting value 999.

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

**Access level:** 3  
**Calculated:** -  
**Data type:** Unsigned16

**Can be changed:** -  
**Scaling:** -  
**Data set:** -

**Units group:** -  
**Unit selection:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

**Description:** Displays fault buffer changes. This counter is incremented every time the fault buffer changes.

**Dependency:** Refer to: r0945, r0947, r0948, r0949, r2109

### r0945[0...63]: Fault code / Fault code

**Access level:** 3  
**Calculated:** -  
**Data type:** Unsigned16

**Can be changed:** -  
**Scaling:** -  
**Data set:** -

**Units group:** -  
**Unit selection:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

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

**Dependency:** Refer to: r0947, r0948, r0949, r2109, r2130, r2133, r2136

**Notice:** The properties of the fault buffer should be taken from the corresponding product documentation.

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

Fault buffer structure (general principle):
- r0945[0], r0949[0], r0948[0], r2109[0] --> actual fault case, fault 1
- ... r0945[7], r0949[7], r0948[7], r2109[7] --> actual fault case, fault 8
- r0945[8], r0949[8], r0948[8], r2109[8] --> 1st acknowledged fault case, fault 1
- ... r0945[15], r0949[15], r0948[15], r2109[15] --> 1st acknowledged fault case, fault 8
- ... r0945[56], r0949[56], r0948[56], r2109[56] --> 7th acknowledged fault case, fault 1
- ... r0945[63], r0949[63], r0948[63], r2109[63] --> 7th acknowledged fault case, fault 8

### r0946[0...65534]: Fault code list / Fault code list

**Access level:** 3  
**Calculated:** -  
**Data type:** Unsigned16

**Can be changed:** -  
**Scaling:** -  
**Data set:** -

**Units group:** -  
**Unit selection:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

**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.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Scaling</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0947[0...63]</td>
<td>Fault number / Fault number</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>Unsigned16</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This parameter is identical to r0945.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r0948[0...63]</td>
<td>Fault time received in milliseconds / t_fault recv ms</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>Unsigned32</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Displays the system runtime in milliseconds when the fault occurred.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Displays additional information about the fault that occurred (as integer number).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The fault buffer is deleted (cleared) by setting p0952 to 0.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The structure of the fault buffer and the assignment of the indices is shown in r0945.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0952</td>
<td>Fault cases, counter / Fault cases qty</td>
<td>3</td>
<td>U, T</td>
<td>-</td>
<td>Unsigned16</td>
<td></td>
<td>-</td>
<td>0</td>
<td>65535</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Number of fault situations that have occurred since the last reset.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The fault buffer is deleted (cleared) by setting p0952 to 0.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refer to: r0945, r0947, r0948, r2109, r2130, r2133, r2136</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The structure of the fault buffer and the assignment of the indices is shown in r0945.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r0963</td>
<td>PROFIBUS baud rate / PB baud rate</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>Unsigned16</td>
<td></td>
<td>-</td>
<td>0</td>
<td>255</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Displays the corresponding value for the PROFIBUS baud rate.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CU240B-2_DP**

**CU240E-2_DP**

**CU240E-2_DP_F**

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SINAMICS G120 CU240B/E-2 Control Units List Manual (LH11), 01/2012

1-116
**Parameter list**

**Value:**
- 0: 9.6 kbit/s
- 1: 19.2 kbit/s
- 2: 93.75 kbit/s
- 3: 187.5 kbit/s
- 4: 500 kbit/s
- 6: 1.5 Mbit/s
- 8: 6 Mbit/s
- 9: 12 Mbit/s
- 10: 31.25 kbit/s
- 11: 45.45 kbit/s
- 255: unknown

**Description:** Displays the device identification.

**Index:**
- [0] = Company (Siemens = 42)
- [1] = Device type
- [2] = Firmware version
- [3] = Firmware date (year)
- [4] = Firmware date (day/month)
- [5] = Number of drive objects
- [6] = Firmware patch/hot fix

**Note:**
Example:
- r0964[0] = 42 --> SIEMENS
- r0964[1] = device type, see below
- r0964[2] = 403 --> first part of the firmware version V04.03 (for second part, refer to index 6)
- r0964[4] = 1705 --> 17th of May
- r0964[5] = 1 --> 1 drive object
- r0964[8] = 200 --> second part, firmware version (complete version: V04.03.02.00)

**Device type:**
- r0964[1] = 6100 --> SINAMICS G120 CU240B-2_DP
- r0964[1] = 6103 --> SINAMICS G120 CU240B-2
- r0964[1] = 6210 --> SINAMICS G120 CU240E-2_DP
- r0964[1] = 6211 --> SINAMICS G120 CU240E-2_PN
- r0964[1] = 6213 --> SINAMICS G120 CU240E-2
- r0964[1] = 6220 --> SINAMICS G120 CU240E-2_DP_F
- r0964[1] = 6221 --> SINAMICS G120 CU240E-2_PN_F
- r0964[1] = 6223 --> SINAMICS G120 CU240E-2_F

**r0965**

**PROFIdrive profile number / PD profile number**

**CU240B-2_DP**
- **Access level:** 3
- **Can be changed:** -
- **Units group:** -

**CU240E-2_DP**
- **Access level:** 3
- **Can be changed:** -
- **Units group:** -

**CU240E-2_DP_F**
- **Access level:** 3
- **Can be changed:** -
- **Units group:** -

**CU240E-2_PN_F**
- **Access level:** 3
- **Can be changed:** -
- **Units group:** -

**CU240E-2 PN**
- **Access level:** 3
- **Can be changed:** -
- **Units group:** -

**Data type:** Unsigned16

**Description:** Displays the PROFIdrive profile number and profile version.

Constant value = 0329 hex.
Parameters

Parameter list

Byte 1: Profile number = 03 hex = PROFIdrive profile
Byte 2: Profile version = 29 hex = Version 4.1

Note:
When the parameter is read via PROFIdrive, the Octet String 2 data type applies.

---

**p0969**  
**System runtime relative / t_System relative**

Access level: 3  
Calculated: -  
Data type: Unsigned32

Can be changed: T  
Scaling: -  
Data set: -

Units group: -  
Unit selection: -

Min: 0 [ms]  
Max: 4294967295 [ms]  
Factory setting: 0 [ms]

Description:
Displays the system runtime in ms since the last POWER ON.

Note:
The value in p0969 can only be reset to 0.
The value overflows after approx. 49 days.
When the parameter is read via PROFIdrive, the TimeDifference data type applies.

---

**p0970**  
**Reset drive parameters / Drive par reset**

Access level: 1  
Calculated: -  
Data type: Unsigned16

Can be changed: C(1, 30)  
Scaling: -  
Data set: -

Units group: -  
Unit selection: -

Min: 0  
Max: 300  
Factory setting: 0

Description:
The parameter is used to initiate the reset of the drive parameters.
Parameters p0100, p0205 are not reset.
The following motor parameters are defined in accordance with the power unit: p0300 ... p0311.
When downloading settings 10, 11, 12, the buffer memory mode is automatically deactivated (p0014 = 0).

Value:
0: Inactive  
1: Start a parameter reset  
3: Start download of volatile parameters from RAM  
5: Starts a safety parameter reset  
10: Starts to download setting 10  
11: Starts to download setting 11  
12: Starts to download setting 12  
100: Start a BICO interconnection reset  
300: Only Siemens int

Dependency:
Refer to: F01659

Caution:
When the buffer memory is active (see p0014), the actual parameters are backed up from RAM to ROM when a parameter set is loaded (p0970 = 10, 11, 12).

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.

Peculiarities of communication via PROFIBUS DP:
- Communication with Class 1 masters (e.g. S7 controllers) is interrupted.
- Communication with Class 2 masters (e.g. STARTER) is retained.

Note:
A factory setting run can only be started if p0010 was first set to 30 (parameter reset).
At the end of the calculations, p0970 is automatically set to 0.
Parameter reset has been completed if p0970 and p0010 have been set to 0.
For p0970 = 5 the following applies:
The password for Safety Integrated must be set.
When Safety Integrated is enabled, this can result in error messages, which then require an acceptance test to be performed.
Then save the parameters and carry out a POWER ON.
For p0970 = 1 the following applies:
If a Safety Integrated function is parameterized (p9601), then the safety parameters are not reset. In this case, an error message (F01659) is output with fault value 2.
The following generally applies:
One index of parameters p2100, p2101, p2118, p2119, p2126, p2127 is not reset, if a parameterized message is precisely active in this index.

**p0971 Save parameters / Save par**

<table>
<thead>
<tr>
<th>Access level: 1</th>
<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>12</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Setting to save parameters in the non-volatile memory.

**Value:**
- 0: Inactive
- 1: Save drive object
- 10: Save in non-volatile memory as setting 10
- 11: Save in non-volatile memory as setting 11
- 12: Save in non-volatile memory as setting 12

**Dependency:** Refer to: p1960, 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!

**Caution:** The Control Unit power supply may only be powered down after data has been saved (i.e. after data save has been started, wait until the parameter again has the value 0).

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

**p0972 Drive unit reset / Drv_unit reset**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the required procedure to execute a hardware reset for the drive unit.

**Value:**
- 0: Inactive
- 1: Hardware-Reset immediate
- 2: Hardware reset preparation
- 3: Hardware reset after cyclic communication has failed

**Danger:** It must be absolutely ensured that the system is in a safe condition.
- The memory card/device memory of the Control Unit must not be accessed.

**Note:**
- If value = 1:
  - Reset is immediately executed and communications interrupted.
  - After communications have been established, check the reset operation (refer below).
- If value = 2:
  - Help to check the reset operation.
  - Firstly, set p0972 = 2 and then read back. Secondly, set p0972 = 1 (it is possible that this request is possibly no longer acknowledged). The communication is then interrupted.
  - After communications have been established, check the reset operation (refer below).
- If value = 3:
  - The reset is executed after interrupting cyclic communication. This setting is used to implement a synchronized reset by a control for several drive units.
  - If cyclic communication is not active, then the reset is immediately executed.
  - 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 fol-
lowing:
p0972 = 0? --> The reset was successfully executed.
p0972 > 0? --> The reset was not executed.

<table>
<thead>
<tr>
<th>List of existing parameters 1 / List avail par 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r0980[0...299]</strong></td>
</tr>
<tr>
<td><strong>Access level:</strong> 4</td>
</tr>
<tr>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> -</td>
</tr>
<tr>
<td><strong>Scaling:</strong> -</td>
</tr>
<tr>
<td><strong>Data set:</strong> -</td>
</tr>
<tr>
<td><strong>Units group:</strong> -</td>
</tr>
<tr>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td><strong>Max</strong></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>Description:</strong> Displays the parameters that exist for this drive.</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: r0981, r0989</td>
</tr>
</tbody>
</table>
| **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). |

<table>
<thead>
<tr>
<th>List of existing parameters 2 / List avail par 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r0981[0...299]</strong></td>
</tr>
<tr>
<td><strong>Access level:</strong> 4</td>
</tr>
<tr>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> -</td>
</tr>
<tr>
<td><strong>Scaling:</strong> -</td>
</tr>
<tr>
<td><strong>Data set:</strong> -</td>
</tr>
<tr>
<td><strong>Units group:</strong> -</td>
</tr>
<tr>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td><strong>Max</strong></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>Description:</strong> Displays the parameters that exist for this drive.</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: r0980, r0989</td>
</tr>
</tbody>
</table>
| **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). |

<table>
<thead>
<tr>
<th>List of existing parameters 10 / List avail par 10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r0989[0...299]</strong></td>
</tr>
<tr>
<td><strong>Access level:</strong> 4</td>
</tr>
<tr>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> -</td>
</tr>
<tr>
<td><strong>Scaling:</strong> -</td>
</tr>
<tr>
<td><strong>Data set:</strong> -</td>
</tr>
<tr>
<td><strong>Units group:</strong> -</td>
</tr>
<tr>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td><strong>Max</strong></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>Description:</strong> Displays the parameters that exist for this drive.</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: r0980, r0981</td>
</tr>
</tbody>
</table>
| **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). |
### List of modified parameters 1 / List chang. par 1

| 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). |

<p>| Parameter: r0990[0...99] | Access level: 4 | Calculated: - | Data type: Unsigned16 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |</p>
<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

<p>| Parameter: r0991[0...99] | Access level: 4 | Calculated: - | Data type: Unsigned16 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |</p>
<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

<p>| Parameter: r0999[0...99] | Access level: 4 | Calculated: - | Data type: Unsigned16 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |</p>
<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>
### Description:
Sets the source for the speed setpoint.
For single-digit values, the following applies:
The value specifies the main setpoint.
For double-digit values, the following applies:
The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.
Example:
Value = 26
--> The analog setpoint (2) supplies the supplementary setpoint.
--> The fieldbus (6) supplies the main setpoint.

### Value:
- 0: No main setpoint
- 1: Motorized potentiometer
- 2: Analog setpoint
- 3: Fixed speed setpoint
- 6: Fieldbus
- 10: Motor potentiometer + no main setpoint
- 11: Motor potentiometer + motor potentiometer
- 12: Motor potentiometer + analog setpoint
- 13: Motor potentiometer + fixed speed setpoint
- 16: Motor potentiometer + fieldbus
- 20: Analog setpoint + no main setpoint
- 21: Analog setpoint + motor potentiometer
- 22: Analog setpoint + analog setpoint
- 23: Analog setpoint + fixed speed setpoint
- 26: Analog setpoint + fieldbus
- 30: Fixed speed setpoint + no main setpoint
- 31: Fixed speed setpoint + motor potentiometer
- 32: Fixed speed setpoint + analog setpoint
- 33: Fixed speed setpoint + fixed speed setpoint
- 36: Fixed speed setpoint + fieldbus
- 60: Fieldbus + no main setpoint
- 61: Fieldbus + motor potentiometer
- 62: Fieldbus + analog setpoint
- 63: Fieldbus + fixed speed setpoint
- 66: Fieldbus + fieldbus
- 200: Analog output connection

### Dependency:
When changing this parameter, the following settings are influenced:
Refer to: p1070, p1071, p1075, p1076

### Caution:
If p1000 is selected as the main setpoint of the fieldbus, the following BICO interconnection is set automatically:
p2051[1] = r0063

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

### Notice:
The parameter is possibly protected as a result of p0922.
For PROFBUS/PROFINET Control Units, the following applies: The parameter can be freely set by setting p0922 = 999.
Parameter list

p1000[0...n]  Speed setpoint selection / n_set sel

CU240B-2_DP

| Access level: 1 | Calculated: - | Data type: Integer16 |
| Can be changed: T | Scaling: - | Data set: CDS, p0170 |
| Units group: - | Unit selection: - |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>200</td>
<td>6</td>
</tr>
</tbody>
</table>

Description:
Sets the source for the speed setpoint.
For single-digit values, the following applies:
The value specifies the main setpoint.
For double-digit values, the following applies:
The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.
Example:
Value = 26
--> The analog setpoint (2) supplies the supplementary setpoint.
--> The fieldbus (6) supplies the main setpoint.

Value:
0: No main setpoint
1: Motorized potentiometer
2: Analog setpoint
3: Fixed speed setpoint
6: Fieldbus
10: Motor potentiometer + no main setpoint
11: Motor potentiometer + motor potentiometer
12: Motor potentiometer + analog setpoint
13: Motor potentiometer + fixed speed setpoint
16: Motor potentiometer + fieldbus
20: Analog setpoint + no main setpoint
21: Analog setpoint + motor potentiometer
22: Analog setpoint + analog setpoint
23: Analog setpoint + fixed speed setpoint
26: Analog setpoint + fieldbus
30: Fixed speed setpoint + no main setpoint
31: Fixed speed setpoint + motor potentiometer
32: Fixed speed setpoint + analog setpoint
33: Fixed speed setpoint + fixed speed setpoint
36: Fixed speed setpoint + fieldbus
60: Fieldbus + no main setpoint
61: Fieldbus + motor potentiometer
62: Fieldbus + analog setpoint
63: Fieldbus + fixed speed setpoint
66: Fieldbus + fieldbus
200: Analog output connection

Dependency:
When changing this parameter, the following settings are influenced:
Refer to: p1070, p1071, p1075, p1076

Caution:
If p1000 is selected as the main setpoint of the fieldbus, the following BICO interconnection is set automatically:
p2051[1] = r0063

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

Notice:
The parameter is possibly protected as a result of p0922.
For PROFIBUS/PROFINET Control Units, the following applies: The parameter can be freely set by setting p0922 = 999.
Parameters

Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>p1000[0...n]</code></td>
<td>Speed setpoint selection / n_set sel</td>
<td>0-200</td>
</tr>
</tbody>
</table>

**CU240E-2_DP**
- **Access level:** 1
- **Can be changed:** T
- **Units group:** -

**CU240E-2_DP_F**
- **Can be changed:** T
- **Units group:** -

**CU240E-2_PN_F**
- **Can be changed:** T
- **Units group:** -

**CU240E-2 PN**
- **Can be changed:** T
- **Units group:** -

**Description:**
Sets the source for the speed setpoint.

**Value:**
- 0: No main setpoint
- 1: Motorized potentiometer
- 2: Analog setpoint
- 3: Fixed speed setpoint
- 6: Fieldbus
- 7: Analog setpoint 2
- 10: Motor potentiometer + no main setpoint
- 11: Motor potentiometer + motor potentiometer
- 12: Motor potentiometer + analog setpoint
- 13: Motor potentiometer + fixed speed setpoint
- 16: Motor potentiometer + fieldbus
- 17: Motor potentiometer + analog setpoint 2
- 20: Analog setpoint + no main setpoint
- 21: Analog setpoint + motor potentiometer
- 22: Analog setpoint + analog setpoint
- 23: Analog setpoint + fixed speed setpoint
- 26: Analog setpoint 2 + fieldbus
- 27: Analog setpoint + analog setpoint 2
- 30: Fixed speed setpoint + no main setpoint
- 31: Fixed speed setpoint + motor potentiometer
- 32: Fixed speed setpoint + analog setpoint
- 33: Fixed speed setpoint + fixed speed setpoint
- 36: Fixed speed setpoint + fieldbus
- 37: Fixed speed setpoint + analog setpoint 2
- 60: Fieldbus + no main setpoint
- 61: Fieldbus + motor potentiometer
- 62: Fieldbus + analog setpoint
- 63: Fieldbus + fixed speed setpoint
- 66: Fieldbus + fieldbus
- 67: Fieldbus + analog setpoint 2
- 70: Analog setpoint 2 + no main setpoint
- 71: Analog setpoint 2 + motor potentiometer
- 72: Analog setpoint 2 + analog setpoint
- 73: Analog setpoint 2 + fixed speed setpoint
- 76: Analog setpoint 2 + fieldbus
- 77: Analog setpoint 2 + analog setpoint 2
- 200: Analog output connection

**Dependency:**
When changing this parameter, the following settings are influenced:
- Refer to: p1070, p1071, p1075, p1076

**Caution:**
If `p1000` is selected as the main setpoint of the fieldbus, the following BICO interconnection is set automatically:

\[ p2051[1] = r0063 \]
### p1000[0...n]  
**Speed setpoint selection / n_set sel**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU240E-2</strong></td>
<td>0</td>
<td>No main setpoint</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Motorized potentiometer</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Analog setpoint</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Fixed speed setpoint</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Fieldbus</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Analog setpoint 2</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Motor potentiometer + no main setpoint</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Motor potentiometer + motor potentiometer</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Motor potentiometer + analog setpoint</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Motor potentiometer + fixed speed setpoint</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Motor potentiometer + fieldbus</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Motor potentiometer + analog setpoint 2</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Analog setpoint + no main setpoint</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>Analog setpoint + motor potentiometer</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Analog setpoint + analog setpoint</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>Analog setpoint + fixed speed setpoint</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Analog setpoint + fieldbus</td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>Analog setpoint + analog setpoint 2</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>Fixed speed setpoint + no main setpoint</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>Fixed speed setpoint + motor potentiometer</td>
</tr>
<tr>
<td></td>
<td>32</td>
<td>Fixed speed setpoint + analog setpoint</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>Fixed speed setpoint + fixed speed setpoint</td>
</tr>
<tr>
<td></td>
<td>36</td>
<td>Fixed speed setpoint + fieldbus</td>
</tr>
<tr>
<td></td>
<td>37</td>
<td>Fixed speed setpoint + analog setpoint 2</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>Fieldbus + no main setpoint</td>
</tr>
<tr>
<td></td>
<td>61</td>
<td>Fieldbus + motor potentiometer</td>
</tr>
<tr>
<td></td>
<td>62</td>
<td>Fieldbus + analog setpoint</td>
</tr>
<tr>
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<td>Fieldbus + fixed speed setpoint</td>
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<td>66</td>
<td>Fieldbus + fieldbus</td>
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<td>67</td>
<td>Fieldbus + analog setpoint 2</td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>Analog setpoint 2 + no main setpoint</td>
</tr>
<tr>
<td></td>
<td>71</td>
<td>Analog setpoint 2 + motor potentiometer</td>
</tr>
<tr>
<td></td>
<td>72</td>
<td>Analog setpoint 2 + analog setpoint</td>
</tr>
<tr>
<td></td>
<td>73</td>
<td>Analog setpoint 2 + fixed speed setpoint</td>
</tr>
<tr>
<td></td>
<td>76</td>
<td>Analog setpoint 2 + fieldbus</td>
</tr>
<tr>
<td></td>
<td>77</td>
<td>Analog setpoint 2 + analog setpoint 2</td>
</tr>
<tr>
<td></td>
<td>200</td>
<td>Analog output connection</td>
</tr>
</tbody>
</table>

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

#### Notice:
The parameter is possibly protected as a result of p0922.
For PROFIBUS/PROFINET Control Units, the following applies: The parameter can be freely set by setting p0922 = 999.

#### Dependency:
When changing this parameter, the following settings are influenced:
Refer to: p1070, p1071, p1075, p1076
### Parameters

#### Parameter list

**Caution:** If p1000 is selected as the main setpoint of the fieldbus, the following BICO interconnection is set automatically:

\[ p2051[1] = r0063 \]

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

**Notice:** The parameter is possibly protected as a result of p0922.

For PROFIBUS/PROFINET Control Units, the following applies: The parameter can be freely set by setting p0922 = 999.

#### p1001[0...n] CO: Fixed speed setpoint 1 / n_set_fixed 1

<table>
<thead>
<tr>
<th>Access level:</th>
<th>2</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
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</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>p2000</td>
<td>Data set:</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>3_1</td>
<td>Unit selection:</td>
<td>p0505</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-21000.000.000 [rpm]</td>
<td>Max</td>
<td>21000.000.000 [rpm]</td>
<td>Factory setting</td>
<td>0.000 [rpm]</td>
</tr>
</tbody>
</table>

**Description:** Sets a value for the fixed speed / velocity setpoint 1.

**Dependency:** Refer to: p1020, p1021, p1022, p1023, r1024, r1197

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

#### p1002[0...n] CO: Fixed speed setpoint 2 / n_set_fixed 2

<table>
<thead>
<tr>
<th>Access level:</th>
<th>2</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
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</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>p2000</td>
<td>Data set:</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>3_1</td>
<td>Unit selection:</td>
<td>p0505</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-21000.000.000 [rpm]</td>
<td>Max</td>
<td>21000.000.000 [rpm]</td>
<td>Factory setting</td>
<td>0.000 [rpm]</td>
</tr>
</tbody>
</table>

**Description:** Sets a value for the fixed speed / velocity setpoint 2.

**Dependency:** Refer to: p1020, p1021, p1022, p1023, r1024, r1197

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

#### p1003[0...n] CO: Fixed speed setpoint 3 / n_set_fixed 3

<table>
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<th>-</th>
<th>Data type:</th>
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<tr>
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<td>U, T</td>
<td>Scaling:</td>
<td>p2000</td>
<td>Data set:</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>3_1</td>
<td>Unit selection:</td>
<td>p0505</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-21000.000.000 [rpm]</td>
<td>Max</td>
<td>21000.000.000 [rpm]</td>
<td>Factory setting</td>
<td>0.000 [rpm]</td>
</tr>
</tbody>
</table>

**Description:** Sets a value for the fixed speed / velocity setpoint 3.

**Dependency:** Refer to: p1020, p1021, p1022, p1023, r1024, r1197

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

#### p1004[0...n] CO: Fixed speed setpoint 4 / n_set_fixed 4

<table>
<thead>
<tr>
<th>Access level:</th>
<th>2</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
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</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>p2000</td>
<td>Data set:</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>3_1</td>
<td>Unit selection:</td>
<td>p0505</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-21000.000.000 [rpm]</td>
<td>Max</td>
<td>21000.000.000 [rpm]</td>
<td>Factory setting</td>
<td>0.000 [rpm]</td>
</tr>
</tbody>
</table>

**Description:** Sets a value for the fixed speed / velocity setpoint 4.

**Dependency:** Refer to: p1020, p1021, p1022, p1023, r1024, r1197

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1005[0...n]</td>
<td>CO: Fixed speed setpoint 5 / n_set_fixed 5</td>
<td>Sets a value for the fixed speed / velocity setpoint 5.</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>p1006[0...n]</td>
<td>CO: Fixed speed setpoint 6 / n_set_fixed 6</td>
<td>Sets a value for the fixed speed / velocity setpoint 6.</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>p1007[0...n]</td>
<td>CO: Fixed speed setpoint 7 / n_set_fixed 7</td>
<td>Sets a value for the fixed speed / velocity setpoint 7.</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>p1008[0...n]</td>
<td>CO: Fixed speed setpoint 8 / n_set_fixed 8</td>
<td>Sets a value for the fixed speed / velocity setpoint 8.</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>p1009[0...n]</td>
<td>CO: Fixed speed setpoint 9 / n_set_fixed 9</td>
<td>Sets a value for the fixed speed / velocity setpoint 9.</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
</tbody>
</table>
### Parameters

**Parameter list**

<table>
<thead>
<tr>
<th>Description</th>
<th>CO: Fixed speed setpoint 10 / n_set_fixed 10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>3_1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>0.000 [rpm]</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td><strong>Data set:</strong></td>
<td>DDS, p0180</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p1020, p1021, p1022, p1023, r1024, r1197

**Notice:**
- A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

<table>
<thead>
<tr>
<th>Description</th>
<th>CO: Fixed speed setpoint 11 / n_set_fixed 11</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>3_1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>0.000 [rpm]</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td><strong>Data set:</strong></td>
<td>DDS, p0180</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p1020, p1021, p1022, p1023, r1024, r1197

**Notice:**
- A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

<table>
<thead>
<tr>
<th>Description</th>
<th>CO: Fixed speed setpoint 12 / n_set_fixed 12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>3_1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>0.000 [rpm]</td>
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<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td><strong>Data set:</strong></td>
<td>DDS, p0180</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p1020, p1021, p1022, p1023, r1024, r1197

**Notice:**
- A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

<table>
<thead>
<tr>
<th>Description</th>
<th>CO: Fixed speed setpoint 13 / n_set_fixed 13</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>3_1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>0.000 [rpm]</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td><strong>Data set:</strong></td>
<td>DDS, p0180</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p1020, p1021, p1022, p1023, r1024, r1197

**Notice:**
- A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

<table>
<thead>
<tr>
<th>Description</th>
<th>CO: Fixed speed setpoint 14 / n_set_fixed 14</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>2</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>3_1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>0.000 [rpm]</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td><strong>Data set:</strong></td>
<td>DDS, p0180</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p1020, p1021, p1022, p1023, r1024, r1197

**Notice:**
- A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.
### p1015[0...n] CO: Fixed speed setpoint 15 / n_set_fixed 15

| Description: | Sets a value for the fixed speed / velocity setpoint 15. |
| Dependency: | Refer to: p1020, p1021, p1022, p1023, r1024, r1197 |
| Notice: | A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set. |

| Access level: | 2 |
| Can be changed: | U, T |
| Units group: | 3_1 |
| Min | Max |
| -210000.000 [rpm] | 210000.000 [rpm] |

### p1016 Fixed speed setpoint mode / n_setp_fixed mode

| Description: | Sets the mode to select the fixed speed setpoint. |
| Value: | 1: Direct selection |
| 2: Selection binary coded |
| Note: | Re p1016 = 1: In this mode, the fixed speed setpoint is entered using p1001 ... p1004. Re p1016 = 2: In this mode, the fixed speed setpoint is entered using p1001 ... p1015. |

| Access level: | 2 |
| Can be changed: | T |
| Units group: | - |
| Min | Max |
| 1 | 2 |

### p1020[0...n] BI: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0

| Description: | Sets the signal source for selecting the fixed speed setpoint. |
| Dependency: | Selects the required fixed speed setpoint using p1020 ... p1023. Displays the number of the actual fixed speed setpoint in r1197. Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015. Refer to: p1021, p1022, p1023, r1197 |
| Note: | If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0). |

<p>| Access level: | 3 |
| Can be changed: | T |
| Units group: | - |</p>
<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
</table>

### p1021[0...n] BI: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1

| Description: | Sets the signal source for selecting the fixed speed setpoint. |
| Dependency: | Selects the required fixed speed setpoint using p1020 ... p1023. Displays the number of the actual fixed speed setpoint in r1197. Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015. Refer to: p1020, p1022, p1023, r1197 |
| Note: | If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0). |

| Access level: | 3 |
| Can be changed: | T |
| Units group: | - |
### p1022[0...n]

**BI: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Description:** Sets the signal source for selecting the fixed speed setpoint.
- **Dependency:** Selects the required fixed speed setpoint using p1020 ... p1023.
- **Displays the number of the actual fixed speed setpoint in r1197.**
- **Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.**
- **Refer to:** p1020, p1021, p1023, r1197
- **Note:** If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

### p1023[0...n]

**BI: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Description:** Sets the signal source for selecting the fixed speed setpoint.
- **Dependency:** Selects the required fixed speed setpoint using p1020 ... p1023.
- **Displays the number of the actual fixed speed setpoint in r1197.**
- **Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.**
- **Refer to:** p1020, p1021, p1022, r1197
- **Note:** If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

### r1024

**CO: Fixed speed setpoint effective / n_set_fixed eff**

- **Access level:** 3
- **Can be changed:** -
- **Units group:** 3_1
- **Description:** Displays the selected and effective fixed speed setpoint.
- **This setpoint is the output value for the fixed speed setpoints and must be appropriately interconnected (e.g. with the main setpoint).**
- **Dependency:** Selects the required fixed speed setpoint using p1020 ... p1023.
- **Displays the number of the actual fixed speed setpoint in r1197.**
- **Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.**
- **Refer to:** p1020, r1197
- **Note:** If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

### r1025.0

**BO: Fixed speed setpoint status / n_setp_fix status**

- **Access level:** 3
- **Can be changed:** -
- **Units group:** -
- **Description:** Displays the status when selecting the fixed speed setpoints.

<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>Fixed speed setpoint selected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
### Note:

When the fixed speed setpoints are directly selected (p1016 = 1), this bit is set if at least 1 fixed speed setpoint is selected.

### Parameter list

**Dependency:** Refer to: p1016

**Note:**

Re bit 00:

When the fixed speed setpoints are directly selected (p1016 = 1), this bit is set if at least 1 fixed speed setpoint is selected.

---

**p1030[0...n]** **Motorized potentiometer configuration / Mop configuration**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
</tbody>
</table>

**Can be changed:** U, T  
**Scaling:** -  
**Units group:** -  
**Unit selection:** -  

**Description:**

Sets the configuration for the motorized potentiometer.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Data save active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Automatic mode, ramp-function generator active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Initial rounding-off active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Save in NVRAM active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Ramp-function generator always active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notice:**

For p0014 = 1, 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:**

Re bit 00:

0: The setpoint for the motorized potentiometer is not saved and after ON is entered using p1040.

1: The setpoint for the motorized potentiometer is saved after OFF and after ON set to the saved value. In order to save in a non-volatile fashion, bit 03 should be set to 1.

Re bit 01:

0: Without ramp-function generator in the automatic mode (ramp-up/ramp-down time = 0).

1: With ramp-function generator in the automatic mode.

For manual operation (0 signal via BI: p1041), the ramp-function generator is always active.

Re bit 02:

0: Without initial rounding-off

1: With initial rounding-off. The selected ramp-up/down time is correspondingly exceeded. The initial rounding-off is a sensitive way of specifying small changes (progressive reaction when keys are pressed).

The jerk for the initial rounding-off is independent of the ramp-up time and only depends on the selected maximum speed (p1082). It is calculated as follows:

\[
r = 0.01 \% \ast p1082 \, [1/s] \ast 0.13^2 \, [s^2]
\]

The jerk acts up until the maximum acceleration is reached (a_max = p1082 \, [1/s] / p1047 \, [s]), and then the drive continues to run linearly with a constant rate of acceleration. The higher the maximum acceleration (the lower that p1047 is), the longer the ramp-up time increases with respect to the set ramp-up time.

Re bit 03:

0: Non-volatile data save de-activated.

1: The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for bit 00 = 1).

Re bit 04:

When the bit is set, the ramp-function generator is computed independent of the pulse enable. The actual output value of the motorized potentiometer is always in r1050.
### p1035[0...n] BI: Motorized potentiometer setpoint raise / Mop raise

- **CU240B-2_DP**
- **CU240E-2_DP**
- **CU240E-2_DP_F**
- **CU240E-2_PN_F**
- **CU240E-2 PN**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>[0] 2090.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[2] 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[3] 0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source to continually increase the setpoint for the motorized potentiometer.

- The setpoint change (CO: r1050) depends on the set ramp-up time (p1047) and the duration of the signal that is present (BI: p1035).

**Dependency:**
Refer to: p1036

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

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

- **CU240B-2_DP**
- **CU240E-2_DP**
- **CU240E-2_DP_F**
- **CU240E-2_PN_F**
- **CU240E-2 PN**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>[0] 2090.14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[2] 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[3] 0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source to continuously lower the setpoint for the motorized potentiometer.

- The setpoint change (CO: r1050) depends on the set ramp-down time (p1048) and the duration of the signal that is present (BI: p1036).

**Dependency:**
Refer to: p1035

**Notice:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
### p1036[0...n]  
**BI: Motorized potentiometer lower setpoint / Mop lower**

<table>
<thead>
<tr>
<th>CU240B-2</th>
<th>CU240E-2</th>
<th>CU240E-2_F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong> 3</td>
<td><strong>Can be changed:</strong> T</td>
<td><strong>Units group:</strong> -</td>
</tr>
<tr>
<td><strong>Calculated:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong> U32 / Binary</td>
<td><strong>Data set:</strong> CDS, p0170</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source to continuously lower the setpoint for the motorized potentiometer. The setpoint change (CO: r1050) depends on the set ramp-down time (p1048) and the duration of the signal that is present (BI: p1036).

**Dependency:**
Refer to: p1035

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

---

### p1037[0...n]  
**Motorized potentiometer maximum speed / MotP n_max**

<table>
<thead>
<tr>
<th><strong>Access level:</strong> 3</th>
<th><strong>Can be changed:</strong> U, T</th>
<th><strong>Units group:</strong> 3_1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calculated:</strong> p0340 = 1,3,5</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Unit selection:</strong> p0505</td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td><strong>Data set:</strong> DDS, p0180</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td>-210000.000 [rpm]</td>
<td>210000.000 [rpm]</td>
<td>0.000 [rpm]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the maximum speed/velocity for the motorized potentiometer.

**Note:**
This parameter is automatically pre-assigned in the commissioning phase.
The setpoint output from the motorized potentiometer is limited to this value (see function diagram 3020).

---

### p1038[0...n]  
**Motorized potentiometer minimum speed / MotP n_min**

<table>
<thead>
<tr>
<th><strong>Access level:</strong> 3</th>
<th><strong>Can be changed:</strong> U, T</th>
<th><strong>Units group:</strong> 3_1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calculated:</strong> p0340 = 1,3,5</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Unit selection:</strong> p0505</td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td><strong>Data set:</strong> DDS, p0180</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td>-210000.000 [rpm]</td>
<td>210000.000 [rpm]</td>
<td>0.000 [rpm]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the minimum speed/velocity for the motorized potentiometer.

**Note:**
This parameter is automatically pre-assigned in the commissioning phase.
The setpoint output from the motorized potentiometer is limited to this value (see function diagram 3020).

---

### p1039[0...n]  
**BI: Motorized potentiometer inversion / MotP inv**

<table>
<thead>
<tr>
<th><strong>Access level:</strong> 3</th>
<th><strong>Can be changed:</strong> T</th>
<th><strong>Units group:</strong> -</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calculated:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong> U32 / Binary</td>
<td><strong>Data set:</strong> CDS, p0170</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source to invert the minimum speed/velocity or the maximum speed/velocity for the motorized potentiometer.

**Dependency:**
Refer to: p1037, p1038

**Note:**
The inversion is only active during "motorized potentiometer raise" or "motorized potentiometer lower".
### Parameter p1040[0...n]
**Description:** Sets the starting value for the motorized potentiometer. This starting value becomes effective after the drive has been powered up.
**Dependency:** Only effective if p1030.0 = 0.
**Refer to:** p1030

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>Units group</td>
<td>3 _ 1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-210000.000 [rpm]</td>
<td>210000.000 [rpm]</td>
<td>0.000 [rpm]</td>
</tr>
</tbody>
</table>

### Parameter p1041[0...n]
**Description:** Sets the signal source to change over from manual to automatic when using a motorized potentiometer.
**Dependency:** Refer to: p1030, p1035, p1036, p1042
**Note:** The effectiveness of the internal ramp-function generator can be set in automatic mode.

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>U32 / Binary</td>
<td>T</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### Parameter p1042[0...n]
**Description:** Sets the signal source for the setpoint of the motorized potentiometer in the automatic mode.

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>U32 / FloatingPoint32</td>
<td>T</td>
<td>p2000</td>
<td>CDS, p0170</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### Parameter p1043[0...n]
**Description:** Sets the signal source to accept the setting value for the motorized potentiometer.
**Dependency:** Refer to: p1044
**Note:** The setting value (CI: p1044) becomes effective for a 0/1 edge of the setting command (BI: p1043).

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>U32 / Binary</td>
<td>T</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### Parameter p1044[0...n]
**Description:** Sets the signal source for the setting value for the motorized potentiometer.
**Dependency:** Refer to: p1043
### Parameter List

**Note:**
- The setting value (CI: p1044) becomes effective for a 0/1 edge of the setting command (BI: p1043).

- **r1045**
  
  **CO: Mot. potentiometer speed setp. in front of ramp-fct. gen. / Mop n_set bef RFG**
  
  **Description:**
  Sets the effective setpoint in front of the internal motorized potentiometer ramp-function generator.
  
  **Dependency:**
  Refer to: p1030, p1048, p1082
  
  **Note:**
  When the initial rounding-off is activated (p1030.2) the ramp-up time is correspondingly extended.

- **p1047[0...n]**
  
  **Motorized potentiometer ramp-up time / Mop ramp-up time**
  
  **Description:**
  Sets the ramp-up time for the internal ramp-function generator for the motorized potentiometer.
  The setpoint is changed from zero up to the speed/velocity limit (p1082) within this time (if no initial rounding-off has been activated).
  
  **Dependency:**
  Refer to: p1030, p1048, p1082
  
  **Note:**
  When the initial rounding-off is activated (p1030.2) the ramp-up time is correspondingly extended.

- **p1048[0...n]**
  
  **Motorized potentiometer ramp-down time / Mop ramp-down time**
  
  **Description:**
  Sets the ramp-down time for the internal ramp-function generator for the motorized potentiometer.
  The setpoint is changed from the speed/velocity limit (p1082) to zero within this time (if no initial rounding-off has been activated).
  
  **Dependency:**
  Refer to: p1030, p1047, p1082
  
  **Note:**
  The deceleration time is extended corresponding to the activated initial rounding-off (p1030.2).

- **r1050**
  
  **CO: Motor. potentiometer setpoint after the ramp-function generator / Mop setp after RFG**
  
  **Description:**
  Sets the effective setpoint after the internal motorized potentiometer ramp-function generator.
  This setpoint is the output value of the motorized potentiometer and must be appropriately interconnected onwards (e.g. with the main setpoint).
  
  **Dependency:**
  Refer to: p1070
  
  **Note:**
  For "With ramp-function generator", after an OFF1, OFF2, OFF3 or for a 0 signal via BI: p0852 (inhibit operation, suppress pulses) the ramp-function generator output (r1050) is set to the starting value (configuration via p1030.0).
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>p1051[0...n]</th>
<th>CI: Speed limit RFG positive direction of rotation / n_limit RFG pos</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240B-2</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU240B-2_DP</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>CU240E-2</td>
<td>Units group: -</td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td>Min: -</td>
</tr>
<tr>
<td>CU240E-2_PN</td>
<td>Max: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Factory setting 1083[0]</td>
</tr>
</tbody>
</table>

- **Description:** Sets the signal source for the speed limit of the positive direction on the ramp-function generator input.

<table>
<thead>
<tr>
<th>p1051[0...n]</th>
<th>CI: Speed limit RFG positive direction of rotation / n_limit RFG pos</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Units group: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Min: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Max: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Factory setting 9733[0]</td>
</tr>
</tbody>
</table>

- **Description:** Sets the signal source for the speed limit of the positive direction on the ramp-function generator input.

<table>
<thead>
<tr>
<th>p1052[0...n]</th>
<th>CI: Speed limit RFG negative direction of rotation / n_limit RFG neg</th>
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</thead>
<tbody>
<tr>
<td>CU240B-2</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU240B-2_DP</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>CU240E-2</td>
<td>Units group: -</td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td>Min: -</td>
</tr>
<tr>
<td>CU240E-2_PN</td>
<td>Max: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Factory setting 1086[0]</td>
</tr>
</tbody>
</table>

- **Description:** Sets the signal source for the speed limit of the negative direction on the ramp-function generator input.

<table>
<thead>
<tr>
<th>p1052[0...n]</th>
<th>CI: Speed limit RFG negative direction of rotation / n_limit RFG neg</th>
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</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Units group: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Min: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Max: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Factory setting 9733[1]</td>
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</table>

- **Description:** Sets the signal source for the speed limit of the negative direction on the ramp-function generator input.

<table>
<thead>
<tr>
<th>p1055[0...n]</th>
<th>BI: Jog bit 0 / Jog bit 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240B-2</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU240B-2_DP</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>CU240E-2</td>
<td>Units group: -</td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td>Min: -</td>
</tr>
<tr>
<td>CU240E-2_PN</td>
<td>Max: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Factory setting [0] 0</td>
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<tr>
<td>CU240E-2_PN_F</td>
<td>[1] 722.0</td>
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<tr>
<td>CU240E-2_PN_F</td>
<td>[2] 0</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>[3] 0</td>
</tr>
</tbody>
</table>

- **Description:** Sets the signal source for jog 1.
- **Dependency:** Refer to: p0840, p1058
- **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.

### Parameter List

#### p1055[n...n]

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

<table>
<thead>
<tr>
<th>CU240B-2</th>
<th>CU240E-2</th>
<th>CU240E-2_F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level: 3</td>
<td>Can be changed: T</td>
<td>Units group: -</td>
</tr>
</tbody>
</table>

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

**Dependency:** Refer to: p0840, p1058

**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.

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

#### p1056[n...n]

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

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<thead>
<tr>
<th>CU240B-2_DP</th>
<th>CU240E-2_DP</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_PN_F</th>
<th>CU240E-2_PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level: 3</td>
<td>Can be changed: T</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
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</tr>
</tbody>
</table>

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

**Dependency:** Refer to: p0840, p1059

**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.

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>[0] 0</td>
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#### p1058[n...n]

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

<table>
<thead>
<tr>
<th>CU240B-2</th>
<th>CU240E-2</th>
<th>CU240E-2_F</th>
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</thead>
<tbody>
<tr>
<td>Access level: 3</td>
<td>Can be changed: T</td>
<td>Units group: -</td>
</tr>
</tbody>
</table>

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

**Dependency:** Refer to: p0840, p1059

**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.

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

**Dependency:** Refer to: p0840, p1059

**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.

#### p1058[n...n]

**Jog 1 speed setpoint / Jog 1 n_set**

<table>
<thead>
<tr>
<th>Access level: 2</th>
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<th>Units group: 3_1</th>
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</thead>
<tbody>
<tr>
<td>Calculated: -</td>
<td>Scaling: -</td>
<td>Unit selection: p0505</td>
</tr>
</tbody>
</table>

**Description:** Sets the speed/velocity for jog 1. Jogging is level-triggered and allows the motor to be incrementally moved.

**Dependency:** Refer to: p1055, p1056

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-210000.000 [rpm]</td>
<td>210000.000 [rpm]</td>
<td>150.000 [rpm]</td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
</tr>
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<tbody>
<tr>
<td>p1059[0...n]</td>
<td><strong>Jog 2 speed setpoint / Jog 2 n_set</strong></td>
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<td>-</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
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<td>Units group: 3_1</td>
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<td>Unit selection: p0505</td>
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<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<tr>
<td></td>
<td>-210000.000 [rpm]</td>
<td>210000.000 [rpm]</td>
<td>-150.000 [rpm]</td>
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<tr>
<td></td>
<td>Sets the speed/velocity for jog 2. Jogging is level-triggered and allows the motor to be incrementally moved.</td>
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<td><strong>Examples</strong>:</td>
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<td>r1055</td>
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<tr>
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<td>The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
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<td>FloatingPoint32</td>
<td>DDS, p0180</td>
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<td>Can be changed: U, T</td>
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<td>Scaling: -</td>
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<td>Units group: 3_1</td>
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<td>Unit selection: p0505</td>
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<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<tr>
<td></td>
<td>0.000 [rpm]</td>
<td>210000.000 [rpm]</td>
<td>210000.000 [rpm]</td>
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<td><strong>Dependency</strong>:</td>
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<tr>
<td></td>
<td>Sets the speed limit/velocity limit effective in the setpoint channel.</td>
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<td><strong>Examples</strong>:</td>
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<td></td>
<td>r1082, p1083, p1085, p1086, p1088</td>
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<td>U32 / FloatingPoint32</td>
<td>CDS, p0170</td>
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<td><strong>Dependency</strong>:</td>
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<tr>
<td></td>
<td>Sets the signal source for the main setpoint.</td>
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<td><strong>Examples</strong>:</td>
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<td>r1024: Fixed speed setpoint effective</td>
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<td>r1050: Motor. potentiometer setpoint after the ramp-function generator</td>
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<td><strong>Notice</strong>:</td>
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<th>Data type</th>
<th>Data set</th>
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<td>U32 / FloatingPoint32</td>
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<td><strong>Dependency</strong>:</td>
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<tr>
<td></td>
<td>Sets the signal source for the main setpoint.</td>
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<td><strong>Examples</strong>:</td>
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<td>r1024: Fixed speed setpoint effective</td>
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<td>r1050: Motor. potentiometer setpoint after the ramp-function generator</td>
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</tbody>
</table>
### Parameter List

**p1071[0...n]**

**CI: Main setpoint scaling / Main setp scal**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -
- **Max:** -

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

**Factory setting:** 1

**Data type:** U32 / FloatingPoint32

**Data set:** CDS, p0170

---

**r1073**

**CO: Main setpoint effective / Main setpoint eff**

- **Access level:** 3
- **Can be changed:** -
- **Units group:** 3_1
- **Min:** - [rpm]
- **Max:** - [rpm]

**Description:**
Displays the effective main setpoint. The value shown is the main setpoint after scaling.

**Units group:** 3_1

**Data type:** FloatingPoint32

**Data set:** -

---

**p1075[0...n]**

**CI: Supplementary setpoint / Suppl setp**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -
- **Max:** -

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

**Dependency:** Refer to: p1076, r1077, r1078

**Factory setting:** 0

**Data type:** U32 / FloatingPoint32

**Data set:** CDS, p0170

---

**p1076[0...n]**

**CI: Supplementary setpoint scaling / Suppl setp scal**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -
- **Max:** -

**Description:**
Sets the signal source for scaling the supplementary setpoint.

**Factory setting:** 1

**Data type:** U32 / FloatingPoint32

**Data set:** CDS, p0170

---

**r1077**

**CO: Supplementary setpoint effective / Suppl setpoint eff**

- **Access level:** 3
- **Can be changed:** -
- **Units group:** 3_1
- **Min:** - [rpm]
- **Max:** - [rpm]

**Description:**
Displays the effective supplementary setpoint. The value shown is the additional setpoint after scaling.

**Units group:** 3_1

**Data type:** FloatingPoint32

**Data set:** -

---

**r1078**

**CO: Total setpoint effective / Total setpoint eff**

- **Access level:** 3
- **Can be changed:** -
- **Units group:** 3_1
- **Min:** - [rpm]
- **Max:** - [rpm]

**Description:**
Displays the total effective setpoint. The value indicates the sum of the effective main setpoint and supplementary setpoint.
### Parameters

#### Parameter list

**p1080[0...n]**  
**Minimum speed / n\_min**  

<table>
<thead>
<tr>
<th>Access level:</th>
<th>1</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(1), T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>3_1</td>
<td>Unit selection:</td>
<td>p0505</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.000 [rpm]</td>
<td>Max</td>
<td>19500.000 [rpm]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.000 [rpm]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**  
Sets the lowest possible motor speed.  
This value is not undershot in operation.

**Dependency:**  
Refer to: p1106

**Notice:**  
The effective minimum speed is formed from p1080 and p1106.

**Note:**  
The parameter value applies for both motor directions.  
In exceptional cases, the motor can operate below this value (e.g. when reversing).

**p1082[0...n]**  
**Maximum speed / n\_max**  

<table>
<thead>
<tr>
<th>Access level:</th>
<th>1</th>
<th>Calculated:</th>
<th>p0340 = 1</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(1), T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>3_1</td>
<td>Unit selection:</td>
<td>p0505</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.000 [rpm]</td>
<td>Max</td>
<td>210000.000 [rpm]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>1500.000 [rpm]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**  
Sets the highest possible speed.

**Dependency:**  
For vector control, the maximum speed is restricted to 60.0 / (8.333 x 500 µs x r0313). This can be identified by a reduction in r1084. p1082 is not changed in this process due to the fact that the operating mode p1300 can be changed over.

If a sine-wave filter (p0230 = 3) is parameterized as output filter, then the maximum speed is limited corresponding to the maximum permissible filter output frequency (refer to the filter data sheet). When using sine-wave filters (p0230 = 3, 4), the maximum speed r1084 is limited to 70% of the resonant frequency of the filter capacitance and the motor leakage inductance.

For reactors and dU/dt filters, it is limited to 120 Hz / r0313.

Refer to: p0230, r0313, p0322

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

**Note:**  
The parameter applies for both motor directions.  
The parameter has a limiting effect and is the reference quantity for all ramp-up and ramp-down times (e.g. down ramps, ramp-function generator, motor potentiometer).

Since the parameter is part of quick commissioning (p0010 = 1), it is defined appropriately when p0310, p0311, p0322, p0324, p0530, p0531, and p0532 are changed.

The following limits are always effective for p1082:

\[
\begin{align*}
p1082 & \leq \min(p0324, p0532) \text{ if } p0324 > 0 \text{ and } p0532 > 0 \\
p1082 & \leq \min(p0322, p0324 = 0 \text{ or } p0532 = 0 \text{ and } p0322 > 0 \\
p1082 & \leq 60 \times \max(15 \times r0310, 650 \text{ Hz}) / r0313 \\
p1082 & \leq 60 \times \max(15 \times r0310, 650 \text{ Hz}) / (k \times r0313), \text{ with } k = 12 \text{ (vector control), } k = 6.5 \text{ (U/f control) }
\end{align*}
\]

During automatic calculation (p0340 = 1, p3900 > 0), the parameter value is assigned the maximum motor speed (p3032). If p3032 = 0, the rated motor speed (p0311) is used as default (pre-assignment) value. For induction motors, the synchronous no-load speed is used as the default value (p0310 x 60 / r0313).

For synchronous motors, the following additionally applies:

During automatic calculation (p0340, p3900), p1082 is limited to speeds where the EMF does not exceed the DC link voltage.

p1082 is also available in the quick commissioning (p0010 = 1); this means that when exiting via p3900 > 0, the value is not changed.
Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notice</th>
<th>Dependency</th>
<th>Access level:</th>
<th>Can be changed:</th>
<th>Units group:</th>
<th>Calculated:</th>
<th>Scaling:</th>
<th>Data type:</th>
<th>Data set:</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1083[0...n]</td>
<td><strong>CO: Speed limit in positive direction of rotation / n_limit pos</strong></td>
<td>Sets the maximum speed for the positive direction.</td>
<td></td>
<td>3</td>
<td>U, T</td>
<td>3_1</td>
<td>-</td>
<td>p2000</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td></td>
<td><strong>Min</strong> 0.000 [rpm] Max 210000.000 [rpm] Factory setting 210000.000 [rpm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| r1084       | **CO: Speed limit positive effective / n_limit pos eff**                   | Displays the effective positive speed limit.                          | Refer to: p1082, p1083, p1085 | 3             | -              | 3_1          | -           | p2000    | FloatingPoint32 | -         |

| p1085[0...n] | **Cl: Speed limit in positive direction of rotation / n_limit pos**       | Sets the signal source for the speed limit of the positive direction.  |                          | 3             | T              | -            | -           | p2000    | U32 / FloatingPoint32 | CDS, p0170 |
|             | **Min** - Max - Factory setting 1083[0]                                  |                                                                        |                          |               |                |              |             |          |            |           |

| p1086[0...n] | **CO: Speed limit in negative direction of rotation / n_limit neg**      | Sets the speed limit for the negative direction.                      | A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set. | 3             | U, T           | 3_1          | -           | p2000    | FloatingPoint32 | DDS, p0180 |
|             | **Min** -210000.000 [rpm] Max 0.000 [rpm] Factory setting -210000.000 [rpm] |                                                                        |                          |               |                |              |             |          |            |           |

| r1087       | **CO: Speed limit negative effective / n_limit neg eff**                 | Displays the effective negative speed limit.                          | Refer to: p1082, p1086, p1088 | 3             | -              | 3_1          | -           | p2000    | FloatingPoint32 | -         |
Parameters
Parameter list

p1088[0...n]  CI: Speed limit in negative direction of rotation / n_limit_neg
Access level: 3  Calculated: -  Data type: U32 / FloatingPoint32
Can be changed: T  Scaling: p2000  Data set: CDS, p0170
Units group: -  Unit selection: -
Min  Max
-  -  Factory setting 1086[0]
Description: Sets the signal source for the speed/velocity limit of the negative direction.

p1091[0...n]  Skip speed 1 / n_skip_1
Access level: 3  Calculated: -  Data type: FloatingPoint32
Can be changed: U, T  Scaling: p2000  Data set: DDS, p0180
Units group: 3_1  Unit selection: p0505
Min  Max
0.000 [rpm] 210000.000 [rpm]  Factory setting 0.000 [rpm]
Description: Sets skip speed 1.
Dependency: Refer to: p1092, p1093, p1094, p1101
Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.
Note: The skip (suppression) speeds can be used to prevent the effects of mechanical resonance.

p1092[0...n]  Skip speed 2 / n_skip_2
Access level: 3  Calculated: -  Data type: FloatingPoint32
Can be changed: U, T  Scaling: p2000  Data set: DDS, p0180
Units group: 3_1  Unit selection: p0505
Min  Max
0.000 [rpm] 210000.000 [rpm]  Factory setting 0.000 [rpm]
Description: Sets skip speed 2.
Dependency: Refer to: p1091, p1093, p1094, p1101
Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

p1093[0...n]  Skip speed 3 / n_skip_3
Access level: 3  Calculated: -  Data type: FloatingPoint32
Can be changed: U, T  Scaling: p2000  Data set: DDS, p0180
Units group: 3_1  Unit selection: p0505
Min  Max
0.000 [rpm] 210000.000 [rpm]  Factory setting 0.000 [rpm]
Description: Sets skip speed 3.
Dependency: Refer to: p1091, p1092, p1094, p1101
Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

p1094[0...n]  Skip speed 4 / n_skip_4
Access level: 3  Calculated: -  Data type: FloatingPoint32
Can be changed: U, T  Scaling: p2000  Data set: DDS, p0180
Units group: 3_1  Unit selection: p0505
Min  Max
0.000 [rpm] 210000.000 [rpm]  Factory setting 0.000 [rpm]
Description: Sets skip speed 4.
Dependency: Refer to: p1091, p1092, p1093, p1101
Notice: Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.
**Parameter list**

---

**Description:**
Sets the bandwidth for the skip speeds/velocities 1 to 4.

**Dependency:**
Refer to: p1091, p1092, p1093, p1094

**Note:**
The setpoint (reference) speeds are skipped (suppressed) in the range of the skip speed ±p1101.
Steady-state operation is not possible in the skipped (suppressed) speed range. The skip (suppression) range is skipped.

Example:
p1091 = 600 and p1101 = 20
--> setpoint speeds between 580 and 620 [rpm] are skipped.

For the skip bandwidths, the following hysteresis behavior applies:
For a setpoint speed coming from below, the following applies:
r1170 < 580 [rpm] and 580 [rpm] <= r1114 <= 620 [rpm] --> r1119 = 580 [rpm]
For a setpoint speed coming from above, the following applies:
r1170 > 620 [rpm] and 580 [rpm] <= r1114 <= 620 [rpm] --> r1119 = 620 [rpm]

---

**Description:**
Sets the signal source for lowest possible motor speed.

**Dependency:**
Refer to: p1080

**Notice:**
The effective minimum speed is formed from p1080 and p1106.

---

**Description:**
Sets the signal source to select the total setpoint.

**Dependency:**
The selection of the total speed setpoint is automatically interconnected to the status word of the technology controller (r2349.4) if the technology controller is selected (p2200 > 0) and operated in the mode p2251 = 0.
Refer to: p1109

**Caution:**
If the technology controller is to supply the total setpoint using p1109, then it is not permissible to withdraw the interconnection to its status word (r2349.4).
### Parameters

#### Parameter list

**p1109[0...n]**  
**CI: Total setpoint / Total setp**

<table>
<thead>
<tr>
<th>Access level: 4</th>
<th>Calculated: -</th>
<th>Data type: U32 / FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Scaling: p2000</td>
<td>Data set: CDS, p0170</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

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

For p1108 = 1 signal, the total setpoint is read in via p1109.

**Dependency:**
The signal source of the total setpoint is automatically interconnected to the output of the technology controller (r2294) if the technology controller is selected (p2200 > 0) and operated in the mode p2251 = 0.

Refer to: p1108

**Caution:**
If the technology controller is to supply the total setpoint using p1109, then it is not permissible to disable the interconnection to its output (r2294).

**r1112**  
**CO: Speed setpoint after minimum limiting / n_set aft min_lim**

<table>
<thead>
<tr>
<th>Access level: 4</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>Scaling: p2000</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: 3_1</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the speed setpoint after the minimum limiting.

Refer to: p1091, p1092, p1093, p1094, p1101

---

**p1108[0...n]**  
**BI: Inhibit negative direction / Inhib neg dir**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: U32 / Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: CDS, p0170</td>
</tr>
<tr>
<td>Units group:</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source to disable the negative direction.

Refer to: p1111

**p1111[0...n]**  
**BI: Inhibit positive direction / Inhib pos dir**

<table>
<thead>
<tr>
<th>Access level: 4</th>
<th>Calculated: -</th>
<th>Data type: U32 / Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: CDS, p0170</td>
</tr>
<tr>
<td>Units group:</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source to disable the positive direction.

Refer to: p1110
### p1113[0...n] BI: Setpoint inversion / Setp inv

**CU240B-2**

**CU240E-2**

**CU240E-2_F**

**CU240E-2_PN_F**

**CU240E-2 PN**

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

**Dependency:**
Refer to: r1198

**Caution:**
If the technology controller is being used as the speed main setpoint (p2251 = 0), do not invert the setpoint using p1113 when the technology controller is enabled because this can cause the speed to change suddenly and lead to positive couplings in the control loop.

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

### p1114 CO: Setpoint after the direction limiting / Setp after limit

**Access level:** 3

**Can be changed:** T

**Units group:** -

**Min**
- [rpm]

**Max**
- [rpm]

**Data type:** FloatingPoint32

**Data set:** -

**Units group:** 3_1

**Unit selection:** p0505

**Description:**
Displays the speed/velocity setpoint after the changeover and limiting the direction.

### p1115 Ramp-function generator selection / RFG selection

**Access level:** 3

**Can be changed:** T

**Units group:** -

**Min**
0

**Max**
1

**Data type:** Integer16

**Data set:** -

**Factory setting**

0

1

**Description:**
Sets the ramp-function generator type.
### Parameter list

**Value:**

- 0: Basic ramp-function generator
- 1: Extended ramp-function generator

**Note:**
Another ramp-function generator type can only be selected when the motor is at a standstill.

#### r1119

**CO: Ramp-function generator setpoint at the input / RFG setp at inp**

- **Access level:** 3
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** -
- **Scaling:** p2000
- **Data set:** -
- **Units group:** 3_1
- **Unit selection:** p0505

**Description:**
Displays the setpoint at the input of the ramp-function generator.

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

**Note:**
The setpoint is influenced by other functions, e.g. skip (suppressed) speeds, minimum and maximum limits.

#### p1120[0...n]

**Ramp-function generator ramp-up time / RFG ramp-up time**

- **Access level:** 1
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** C(1), U, T
- **Scaling:** -
- **Data set:** DDS, p0180
- **Units group:** -
- **Unit selection:** -

**Description:**
The ramp-function generator ramps-up the speed setpoint from standstill (setpoint = 0) up to the maximum speed (p1082) in this time.

**Dependency:**
Refer to: p1082, p1123

**Note:**
The ramp-up time can be scaled via connector input p1138.

The parameter is adapted during the rotating measurement (p1960 > 0). This is the reason that during the rotating measurement, the motor can accelerate faster than was originally parameterized.

For U/f control and sensorless vector control (see p1300), ramp-up times of 0 s are not expedient. The setting should be based on the startup times (r0345) of the motor.

#### p1121[0...n]

**Ramp-function generator ramp-down time / RFG ramp-down time**

- **Access level:** 1
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** C(1), U, T
- **Scaling:** -
- **Data set:** DDS, p0180
- **Units group:** -
- **Unit selection:** -

**Description:**
The ramp-function generator ramps-down the speed setpoint from the maximum speed (p1082) down to standstill (setpoint = 0) in this time.

**Dependency:**
The parameter is pre-assigned depending on the size of the power unit.

Refer to: p1082, p1123

**Note:**
For U/f control and sensorless vector control (see p1300), ramp-down times of 0 s are not recommended. The setting should be based on the startup times (r0345) of the motor.
Note:
For U/f control and sensorless vector control (see p1300), ramp-down times of 0 s are not recommended. The setting should be based on the startup times (r0345) of the motor.

### p1122[0...n] Bi: Bypass ramp-function generator / Bypass RFG

- **Access level:** 4
- **Can be changed:** U, T
- **Units group:** -
- **Min:** -
- **Max:** 0

**Description:**
Sets the signal source for bypassing the ramp generator (ramp-up and ramp-down times = 0).

**Caution:**
If the technology controller is operated in mode p2251 = 0 (technology controller as main speed setpoint), then it is not permissible to disable the interconnection to its status word (r2349).

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

**Note:**
In the case of sensorless vector control, the ramp-function generator must not be bypassed, other than indirectly by means of interconnection with r2349.

### p1123[0...n] Ramp-function generator minimum ramp-up time / RFG t_RU min

- **Access level:** 4
- **Can be changed:** U, T
- **Units group:** -
- **Min:** 0.000 [s]
- **Max:** 999999.000 [s]

**Description:**
Sets the minimum ramp-up time.

**Dependency:**
Refer to: p1082

**Note:**
The setting should be based on the startup times (r0345) of the motor.

If the maximum speed p1082 changes, p1123 is re-calculated.

### p1127[0...n] Ramp-function generator minimum ramp-down time / RFG t_RD min

- **Access level:** 4
- **Can be changed:** U, T
- **Units group:** -
- **Min:** 0.000 [s]
- **Max:** 999999.000 [s]

**Description:**
Sets the minimum ramp-down time.

**Dependency:**
Refer to: p1082

**Note:**
For U/f control and sensorless vector control (see p1300), ramp-down times of 0 s are not recommended. The setting should be based on the startup times (r0345) of the motor. If the maximum speed p1082 changes, p1127 is re-calculated.
### Parameters

**Parameter list**

**Note:**
For U/f control and sensorless vector control (see p1300), ramp-down times of 0 s are not recommended. The setting should be based on the startup times (r0345) of the motor. If the maximum speed p1082 changes, p1127 is recalculated.

If a braking resistor is connected to the DC link (p0219 > 0), then the minimum ramp-down time is automatically adapted using p1127.

<table>
<thead>
<tr>
<th><strong>p1130[0...n]</strong></th>
<th>Ramp-function generator initial rounding-off time / RFG t_start_round</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PM230</strong></td>
<td>Access level: 2&lt;br&gt;Can be changed: U, T&lt;br&gt;Units group: -&lt;br&gt;Min 0.000 [s]&lt;br&gt;Max 30.000 [s]&lt;br&gt;Factory setting 2.000 [s]&lt;br&gt;Description: Sets the initial rounding-off time for the extended ramp generator. The value applies to ramp-up and ramp-down. Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.</td>
</tr>
<tr>
<td><strong>PM240</strong>&lt;br&gt;PM250, PM260</td>
<td>Access level: 2&lt;br&gt;Can be changed: U, T&lt;br&gt;Units group: -&lt;br&gt;Min 0.000 [s]&lt;br&gt;Max 30.000 [s]&lt;br&gt;Factory setting 0.000 [s]&lt;br&gt;Description: Sets the initial rounding-off time for the extended ramp generator. The value applies to ramp-up and ramp-down. Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p1131[0...n]</strong></th>
<th>Ramp-function generator final rounding-off time / RFG t_end_delay</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PM230</strong></td>
<td>Access level: 2&lt;br&gt;Can be changed: U, T&lt;br&gt;Units group: -&lt;br&gt;Min 0.000 [s]&lt;br&gt;Max 30.000 [s]&lt;br&gt;Factory setting 2.000 [s]&lt;br&gt;Description: Sets the final rounding-off time for the extended ramp generator. The value applies to ramp-up and ramp-down. Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.</td>
</tr>
<tr>
<td><strong>PM240</strong>&lt;br&gt;PM250, PM260</td>
<td>Access level: 2&lt;br&gt;Can be changed: U, T&lt;br&gt;Units group: -&lt;br&gt;Min 0.000 [s]&lt;br&gt;Max 30.000 [s]&lt;br&gt;Factory setting 0.000 [s]&lt;br&gt;Description: Sets the final rounding-off time for the extended ramp generator. The value applies to ramp-up and ramp-down. Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p1134[0...n]</strong></th>
<th>Ramp-function generator rounding-off type / RFG round-off type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PM230</strong></td>
<td>Access level: 2&lt;br&gt;Can be changed: U, T&lt;br&gt;Units group: -&lt;br&gt;Min 0&lt;br&gt;Max 1&lt;br&gt;Factory setting 0&lt;br&gt;Description: Sets the smoothed response to the OFF1 command or the reduced setpoint for the extended ramp-function generator.</td>
</tr>
<tr>
<td><strong>Value:</strong>&lt;br&gt;0: Cont. smoothing&lt;br&gt;1: Discont smoothing</td>
<td></td>
</tr>
</tbody>
</table>

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### Parameter List

#### Parameters

<table>
<thead>
<tr>
<th>Dependency</th>
<th>Note</th>
<th>Description</th>
<th>p1135[0...n] OFF3 ramp-down time / t_RD</th>
</tr>
</thead>
<tbody>
<tr>
<td>No effect up to initial rounding-off time (p1130) &gt; 0 s.</td>
<td>If the setpoint is reduced while ramping-up, initially a final rounding-off is carried out and then the ramp-up completed. During the final rounding-off, the output of the ramp-function generator continues to go in the direction of the previous setpoint (overshoot). After the final rounding-off has been completed, the output goes toward the new setpoint.</td>
<td>Sets the ramp-down time from the maximum speed down to zero speed for the OFF3 command.</td>
<td>PM230</td>
</tr>
</tbody>
</table>

| Access level: 2 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: C(1), U, T | Scaling: - | Data set: DDS, p0180 |
| Units group: - | Unit selection: - |
| Min 0.000 [s] | Max 5400.000 [s] | Factory setting 30.000 [s] |

<table>
<thead>
<tr>
<th>Description:</th>
<th>p1135[0...n] OFF3 initial rounding-off time / t_strt_rnd</th>
</tr>
</thead>
<tbody>
<tr>
<td>The parameter is pre-assigned depending on the size of the power unit.</td>
<td>Sets the initial rounding-off time for OFF3 for the extended ramp generator.</td>
</tr>
</tbody>
</table>

| p1136[0...n] OFF3 initial rounding-off time / t_strt_rnd |
|------------|----------------|
| This time can be exceeded if the DC link voltage reaches its maximum value. | |

| p1137[0...n] OFF3 final rounding-off time / t_end_del |
|------------|----------------|
| Sets the final rounding-off time for OFF3 for the extended ramp generator. | |

---

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SINAMICS G120 CU240B/E-2 Control Units List Manual (LH11), 01/2012
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
<th>Access level</th>
<th>Calculated</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1138[0...n]</td>
<td>CI: Up ramp scaling / Up ramp scaling</td>
<td></td>
<td></td>
<td>3</td>
<td>-</td>
<td>T</td>
<td>PERCENT</td>
<td>U32 / FloatingPoint32</td>
<td>CDS, p0170</td>
</tr>
<tr>
<td>p1139[0...n]</td>
<td>CI: Down ramp scaling / Down ramp scaling</td>
<td></td>
<td></td>
<td>3</td>
<td>-</td>
<td>T</td>
<td>PERCENT</td>
<td>U32 / FloatingPoint32</td>
<td>CDS, p0170</td>
</tr>
<tr>
<td>p1140[0...n]</td>
<td>BI: Enable ramp-function generator/inhibit ramp-function generator / RFG enable</td>
<td></td>
<td></td>
<td>3</td>
<td>-</td>
<td>T</td>
<td>-</td>
<td>U32 / Binary</td>
<td>CDS, p0170</td>
</tr>
</tbody>
</table>

**Description:**
- p1138 sets the signal source for scaling the up ramp.
- p1139 sets the signal source for scaling the down ramp.
- p1140 sets the signal source for the command "enable ramp-function generator/inhibit ramp-function generator".

**Dependency:**
- Refer to: p1120
- Refer to: p1121
- Refer to: r0054, p1141, p1142

**Note:**
- The ramp-up time is set in p1120.
- The ramp-down time is set in p1121.
- 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.
**p1140[0...n]**

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

<table>
<thead>
<tr>
<th>Parameter Access</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240B-2</td>
<td>-</td>
<td>U32 / Binary</td>
<td>CDS, p0170</td>
</tr>
<tr>
<td>CU240E-2</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2 F</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).

- **BI: p1140 = 0 signal:**
  Inhibits the ramp-function generator (the ramp-function generator output is set to zero).
- **BI: p1140 = 1 signal:**
  Ramp-function generator enable.

**Dependency:**
Refer to: r0054, p1141, 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>Parameter Access</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240B-2_DP</td>
<td>-</td>
<td>U32 / Binary</td>
<td>CDS, p0170</td>
</tr>
<tr>
<td>CU240B-2_DPN</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP_PN_F</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2 PN</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).

- **BI: p1141 = 0 signal:**
  Freeze the ramp-function generator.
- **BI: p1141 = 1 signal:**
  Continue ramp-function generator.

**Dependency:**
Refer to: r0054, p1140, p1142

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

**Notice:**
The ramp-function generator is, independent of the state of the signal source, active in the following cases:
- OFF1/OFF3.
- ramp-function generator output within the suppression bandwidth.
- ramp-function generator output below the minimum speed.
### Parameters

#### Parameter list

**p1141[0...n]**

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

| Access level: | 3 |
| Calculated: | - |
| Data type: | U32 / Binary |
| Can be changed: | T |
| Scaling: | - |
| Data set: | CDS, p0170 |
| Units group: | - |
| Unit selection: | - |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**

Sets the signal source for the command "continue ramp-function generator/freeze ramp-function generator". For the PROFIdrive profile, this command corresponds to control word 1 bit 5 (STW1.5).

- **BI: p1141 = 0 signal**:
  - Freezes the ramp-function generator.

- **BI: p1141 = 1 signal**:
  - Continue ramp-function generator.

**Dependency:**

Refer to: r0054, p1140, p1142

**Caution:**

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

**Notice:**

The ramp-function generator is, independent of the state of the signal source, active in the following cases:

- OFF1/OFF3.
- ramp-function generator output within the suppression bandwidth.
- ramp-function generator output below the minimum speed.

**p1142[0...n]**

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

| Access level: | 3 |
| Calculated: | - |
| Data type: | U32 / Binary |
| Can be changed: | T |
| Scaling: | - |
| Data set: | CDS, p0170 |
| Units group: | - |
| Unit selection: | - |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0] 2090.6</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>[1] 2090.6</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>[2] 2090.6</td>
<td>1</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).

- **BI: p1142 = 0 signal**:
  - Inhibits the setpoint (the ramp-function generator input is set to zero).

- **BI: p1142 = 1 signal**:
  - Setpoint enable.

**Dependency:**

Refer to: p1140, p1141

**Caution:**

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

**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**
**p1142[0...n]**  
**BI: Enable setpoint/inhibit setpoint / Setpoint enable**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CU240B-2</th>
<th>CU240E-2</th>
<th>CU240E-2_F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td>Calculated: -</td>
<td>Data type: U32 / Binary</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling: -</td>
<td>Data set: CDS, p0170</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</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.

**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
- BI: p1142 = 1 signal

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

**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

**Description:**
Sets the signal source for accepting the setting value of the ramp-function generator.

**Dependency:**
The signal source for accepting the setting value is set using parameters.

**Note:**
The ramp-function generator output is immediately (without delay) set to the setting value of the ramp-function generator.

1 signal:
The setting value of the ramp-function generator is effective.

1/0 signal:
The input value of the ramp-function generator is effective. The ramp-function generator output is adapted to the input value using the ramp-up time or the ramp-down time.

0 signal:
The input value of the ramp-function generator is effective.

**Description:**
Sets the signal source for the ramp-function generator setting value.

**Dependency:**
The signal source for accepting the setting value is set using parameters.

**Note:**
The ramp-function generator output is immediately (without delay) set to the setting value of the ramp-function generator.

1 signal:
The setting value of the ramp-function generator is effective.

1/0 signal:
The input value of the ramp-function generator is effective. The ramp-function generator output is adapted to the input value using the ramp-up time or the ramp-down time.

0 signal:
The input value of the ramp-function generator is effective.
### p1145[0...n] Ramp-function generator tracking intensity. / RFG track intensity

| Access level: 4 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: U, T | Scaling: - | Data set: DDS, p0180 |
| Units group: - | Unit selection: - |

**Min** 0.0  **Max** 50.0  **Factory setting** 0.0

**Description:**
Sets the ramp-function generator tracking.

The output value of the ramp-function generator is tracked (corrected) corresponding to the maximum possible drive acceleration. The reference value is the deviation at the speed/velocity controller input that is necessary to ensure that the motor accelerates at the torque/force limit.

**Notice:**
If ramp-function generator tracking is activated and the ramp time is set too short, this can cause unsteady acceleration.

**Remedy:**
- switch off ramp-function generator tracking (p1145 = 0).
- increase the ramp-up/ramp-down time (p1120, p1121).

**Note:**
In the U/f mode, ramp-function generator tracking is not active.

### p1148[0...n] Ramp-function gen., tolerance for ramp-up and ramp-down active / RFG tol HL/RL act

| Access level: 3 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: U, T | Scaling: - | Data set: DDS, p0180 |
| Units group: 3_1 | Unit selection: p0505 |

**Min** 0.000 [rpm]  **Max** 1000.000 [rpm]  **Factory setting** 19.800 [rpm]

**Description:**
Sets the tolerance value for the status of the ramp-function generator (ramp-up active, ramp-down active).

If the input of the ramp-function generator does not change in comparison to the output by more than the entered tolerance time, then the status bits "ramp-up active" and "ramp-down active" are not influenced.

**Dependency:**
Refer to: r1199

### r1149 CO: Ramp-function generator, acceleration / RFG acceleration

| Access level: 3 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: - | Scaling: p2007 | Data set: - |
| Units group: 39_1 | Unit selection: p0505 |

**Min** - [rev/s²]  **Max** - [rev/s²]  **Factory setting** - [rev/s²]

**Description:**
Displays the acceleration of the ramp-function generator.

**Dependency:**
Refer to: p1145

### r1150 CO: Ramp-function generator speed setpoint at the output / RFG n_set at outp

| Access level: 4 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: - | Scaling: p2000 | Data set: - |
| Units group: 3_1 | Unit selection: p0505 |

**Min** - [rpm]  **Max** - [rpm]  **Factory setting** - [rpm]

**Description:**
Displays the setpoint at the output of the ramp-function generator.
### p1155[0...n] Cl: Speed controller speed setpoint 1 / n_ctrl n_set 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>-</td>
<td>U32 / FloatingPoint32</td>
<td>T</td>
<td>p2000</td>
<td>CDS, p0170</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for speed setpoint 1 of the speed controller.

**Dependency:**
The effectiveness of this setpoint depends on, e.g. STW1.4 and STW1.6.

The signal source of the total setpoint is automatically interconnected to the output of the technology controller (r2294) if the technology controller is selected (p2200 > 0) and operated in the mode p2251 = 1.

Refer to: r0002, p0840, p0844, p0848, p0852, p0854, r0898, p1140, p1142, p1160, r1170

**Caution:**
If the technology controller is activated, then it is not permissible to withdraw the parameter interconnection.

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

### p1160[0...n] Cl: Speed controller speed setpoint 2 / n_ctrl n_set 2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>-</td>
<td>U32 / FloatingPoint32</td>
<td>T</td>
<td>p2000</td>
<td>CDS, p0170</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for speed setpoint 2 of the speed controller.

**Dependency:**
Refer to: p1155, r1170

**Note:**
For OFF1/OFF3, the ramp-function generator ramp is effective.

The ramp-function generator is set (to the setpoint (r1170)) and stops the drive corresponding to the ramp-down time (p1121 or p1135). While stopping via the ramp-function generator, STW1.4 is effective (enable ramp-function generator).

### r1169 CO: Speed controller, speed setpoints 1 and 2 / n_ctrl n_set 1/2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>p2000</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the speed setpoint after the addition of the speed setpoint 1 (p1155) and speed setpoint 2 (p1160).

**Dependency:**
Refer to: p1155, p1160

**Note:**
The value is only correctly displayed at r0899.2 = 1 (operation enabled).

### r1170 CO: Speed controller, setpoint sum / n_ctrl setp sum

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>p2000</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the speed setpoint after selecting the ramp-function generator and adding the speed setpoint 1 (p1155) and speed setpoint 2 (p1160).

**Dependency:**
Refer to: r1150, p1155, p1160
Parameters
Parameter list

r1197 Fixed speed setpoint number actual / n_set_fixed No act
Access level: 4 Calculated: - Data type: Unsigned32
Can be changed: - Scaling: - Data set: -
Units group: - Unit selection: -
Min - Max - Factory setting -
Description: Displays the number of the selected fixed speed/velocity setpoint.
Dependency: Refer to: p1020, p1021, p1022, p1023
Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

r1198.0...15 CO/BO: Control word setpoint channel / STW setpoint chan
Access level: 3 Calculated: - Data type: Unsigned16
Can be changed: - Scaling: - Data set: -
Units group: - Unit selection: -
Min - Max - Factory setting -
Description: Displays the control word for the setpoint channel.

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Fixed setp bit 0</td>
<td>Yes</td>
<td>No</td>
<td>3010</td>
</tr>
<tr>
<td>01</td>
<td>Fixed setp bit 1</td>
<td>Yes</td>
<td>No</td>
<td>3010</td>
</tr>
<tr>
<td>02</td>
<td>Fixed setp bit 2</td>
<td>Yes</td>
<td>No</td>
<td>3010</td>
</tr>
<tr>
<td>03</td>
<td>Fixed setp bit 3</td>
<td>Yes</td>
<td>No</td>
<td>3010</td>
</tr>
<tr>
<td>05</td>
<td>Inhibit negative direction</td>
<td>Yes</td>
<td>No</td>
<td>3040</td>
</tr>
<tr>
<td>06</td>
<td>Inhibit positive direction</td>
<td>Yes</td>
<td>No</td>
<td>3040</td>
</tr>
<tr>
<td>11</td>
<td>Setpoint inversion</td>
<td>Yes</td>
<td>No</td>
<td>3040</td>
</tr>
<tr>
<td>13</td>
<td>Motorized potentiometer raise</td>
<td>Yes</td>
<td>No</td>
<td>3020</td>
</tr>
<tr>
<td>14</td>
<td>Motorized potentiometer lower</td>
<td>Yes</td>
<td>No</td>
<td>3020</td>
</tr>
<tr>
<td>15</td>
<td>Bypass ramp-function generator</td>
<td>Yes</td>
<td>No</td>
<td>3060, 3070</td>
</tr>
</tbody>
</table>

r1199.0...8 CO/BO: Ramp-function generator status word / RFG ZSW
Access level: 4 Calculated: - Data type: Unsigned16
Can be changed: - Scaling: - Data set: -
Units group: - Unit selection: -
Min - Max - Factory setting -
Description: Displays the status word for the ramp-function generator (RFG).

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>Ramp-up active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Ramp-down active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>RFG active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Ramp-function generator set</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Ramp-function generator held</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Ramp-function generator tracking active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Maximum limit active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Ramp-function generator, acceleration positive</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Ramp-function generator, acceleration negative</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: Re bit 02:
The bit is an OR logic operation - bit 00 and bit 01.
### Description:
Sets the operating mode for flying restart.

The flying restart allows the drive converter to be powered up while the motor is still rotating. In so doing, the drive converter output frequency is changed until the actual motor speed/velocity is found. The motor then accelerates up to the setpoint at the ramp-function generator setting.

### Value:
- 0: Flying restart inactive
- 1: Flying restart always active (start in setpoint direction)
- 4: Flying restart always active (start only in setpoint direction)

### Dependency:
A differentiation is made between flying restart for U/f control and for vector control (p1300).

- **Flying restart, U/f control:** p1202, p1203, r1204
- **Flying restart, vector control:** p1202, p1203, r1205

For synchronous motors, flying restart cannot be activated.

Refer to: p1201
Refer to: F07330, F07331

### Notice:
The "flying restart" function must be used in cases where the motor may still be running (e.g., after a brief line supply interruption) or is being driven by the load. The system might otherwise shut down as a result of overcurrent.

### Note:
- When p1200 = 1, 4: Flying restart is active after faults, OFF1, OFF2, OFF3.
- When p1200 = 1: The search is made in both directions.
- When p1200 = 4: The search is only made in the setpoint direction.

For U/f control (p1300 < 20), the following applies:
The speed can only be sensed for values above approx. 5 % of the rated motor speed. For lower speeds, it is assumed that the motor is at a standstill.

If p1200 is changed during commissioning (p0010 > 0), then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of p1200 have been changed by a parameter that was set when the drive was commissioned (e.g., p0300).

### Description:
Sets the signal source to enable the "flying restart" function.

### Dependency:
Refer to: p1200

### Note:
Withdrawing the enable signal has the same effect as setting p1200 = 0.

### Description:
Sets the search current for the "flying restart" function.
The value is referred to the motor magnetizing current.

### Dependency:
Refer to: r0331
Caution: An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.

Note: In U/f control mode, the parameter serves as a threshold value for establishing the current at the beginning of the flying restart function. When the threshold value is reached, the prevailing search current is set dependent upon the frequency on the basis of voltage inputs. Reducing the search current can also improve flying restart performance (if the system moment of inertia is not very high, for example).

### p1202[0...n] Flying restart search current / FlyRest I_srch

<table>
<thead>
<tr>
<th>PM240</th>
<th>PM250, PM260</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Min 10 [%]</td>
<td>Max 400 [%]</td>
</tr>
<tr>
<td>Factory setting 100 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the search current for the "flying restart" function. The value is referred to the motor magnetizing current.

**Dependency:** Refer to: r0331

**Caution:** An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.

**Note:** In U/f control mode, the parameter serves as a threshold value for establishing the current at the beginning of the flying restart function. When the threshold value is reached, the prevailing search current is set dependent upon the frequency on the basis of voltage inputs. Reducing the search current can also improve flying restart performance (if the system moment of inertia is not very high, for example).

### p1203[0...n] Flying restart search rate factor / FlyRst v_Srch Fact

<table>
<thead>
<tr>
<th>PM230</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Units group: -</td>
</tr>
<tr>
<td>Min 10 [%]</td>
</tr>
<tr>
<td>Factory setting 150 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the factor for the search speed for flying restart. The value influences the rate at which the output frequency is changed during a flying restart. A higher value results in a longer search time.

**Caution:** An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.

**Note:** The parameter factory setting is selected so that standard induction motors that are rotating can be found and restarted as quickly as possible (fast flying restart). With this pre-setting, if the motor is not found (e.g. for motors that are accelerated as a result of active loads or with U/f control and low speeds), we recommend that the search rate is reduced (by increasing p1203).

### p1203[0...n] Flying restart search rate factor / FlyRst v_Srch Fact

<table>
<thead>
<tr>
<th>PM240</th>
<th>PM250, PM260</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Min 10 [%]</td>
<td>Max 4000 [%]</td>
</tr>
<tr>
<td>Factory setting 100 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the factor for the search speed for flying restart. The value influences the rate at which the output frequency is changed during a flying restart. A higher value results in a longer search time.
Caution: An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.

For vector control, a value that is too low or too high can cause flying restart to become unstable.

Note: The parameter factory setting is selected so that standard induction motors that are rotating can be found and restarted as quickly as possible (fast flying restart).

With this pre-setting, if the motor is not found (e.g. for motors that are accelerated as a result of active loads or with U/f control and low speeds), we recommend that the search rate is reduced (by increasing p1203).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1204.0...13</td>
<td>CO/BO: Flying restart, U/f control status / FlyRest Uf st</td>
</tr>
<tr>
<td>Access level: 4</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Description:</td>
<td>Displays the status for checking and monitoring flying restart states in the U/f control mode.</td>
</tr>
<tr>
<td>Bit field:</td>
<td>Bit</td>
</tr>
<tr>
<td>00</td>
<td>Current impressed</td>
</tr>
<tr>
<td>01</td>
<td>No current flow</td>
</tr>
<tr>
<td>02</td>
<td>Voltage input</td>
</tr>
<tr>
<td>03</td>
<td>Voltage reduced</td>
</tr>
<tr>
<td>04</td>
<td>Start ramp-function generator</td>
</tr>
<tr>
<td>05</td>
<td>Wait for execution</td>
</tr>
<tr>
<td>06</td>
<td>Slope filter act</td>
</tr>
<tr>
<td>07</td>
<td>Positive gradient</td>
</tr>
<tr>
<td>08</td>
<td>Current &lt; thresh</td>
</tr>
<tr>
<td>09</td>
<td>Current minimum</td>
</tr>
<tr>
<td>10</td>
<td>Search in the positive direction</td>
</tr>
<tr>
<td>11</td>
<td>Stop after positive direction</td>
</tr>
<tr>
<td>12</td>
<td>Stop after negative direction</td>
</tr>
<tr>
<td>13</td>
<td>No result</td>
</tr>
</tbody>
</table>

<p>| r1205.0...15 | CO/BO: Flying restart, vector control status / FlyRest vector st |
| Access level: 4 | Calculated: - |
| Can be changed: - | Scaling: - |
| Units group: - | Unit selection: - |</p>
<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Displays the status for checking and monitoring flying restart states in the vector control mode.</td>
<td></td>
</tr>
<tr>
<td>Bit field:</td>
<td>Bit</td>
<td>Signal name</td>
</tr>
<tr>
<td>00</td>
<td>Speed adaptation circuit record angle</td>
<td>Yes</td>
</tr>
<tr>
<td>01</td>
<td>Speed adaptation circuit set gain to 0</td>
<td>Yes</td>
</tr>
<tr>
<td>02</td>
<td>Isd channel enable</td>
<td>Yes</td>
</tr>
<tr>
<td>03</td>
<td>Speed control switched out</td>
<td>Yes</td>
</tr>
<tr>
<td>04</td>
<td>Quadrature arm switched in</td>
<td>Yes</td>
</tr>
<tr>
<td>05</td>
<td>Special transformation active</td>
<td>Yes</td>
</tr>
<tr>
<td>06</td>
<td>Speed adaptation circuit set I comp to 0</td>
<td>Yes</td>
</tr>
<tr>
<td>07</td>
<td>Current control on</td>
<td>Yes</td>
</tr>
<tr>
<td>08</td>
<td>Isd_set = 0 A</td>
<td>Yes</td>
</tr>
<tr>
<td>09</td>
<td>Frequency held</td>
<td>Yes</td>
</tr>
<tr>
<td>10</td>
<td>Search in the positive direction</td>
<td>Yes</td>
</tr>
<tr>
<td>11</td>
<td>Search Started</td>
<td>Yes</td>
</tr>
<tr>
<td>12</td>
<td>Current impressed</td>
<td>Yes</td>
</tr>
<tr>
<td>13</td>
<td>Search interrupted</td>
<td>Yes</td>
</tr>
<tr>
<td>14</td>
<td>Speed adaptation circuit deviation = 0</td>
<td>Yes</td>
</tr>
<tr>
<td>15</td>
<td>Speed control activated</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Parameters

Parameter list

Note:
Re bit 00 ... 09:
Used to control internal sequences during the flying restart.
Depending on the motor type (p0300), the number of active bits differs.
Re bits 10 ... 15:
Are used to monitor the flying restart sequence.

p1206[0...9]  Faults without automatic restart / F w/out auto AR

Access level: 3  Calculated: -  Data type: Unsigned16
Can be changed: U, T  Scaling: -  Data set: -
Units group: -  Unit selection: -

Min  Max  Factory setting
0  65535  0

Description:  Sets faults for which automatic restart should not be effective.
Dependency:  The setting is only effective for p1210 = 6, 16.
Refer to: p1210

p1210  Automatic restart, mode / AR mode

Access level: 2  Calculated: -  Data type: Integer16
Can be changed: U, T  Scaling: -  Data set: -
Units group: -  Unit selection: -

Min  Max  Factory setting
0  26  0

Description:  Sets the automatic restart mode (AR).
The parameters must be saved in the non-volatile memory p0971 = 1 in order that the setting becomes effective.

Value:
0:  Inhibit automatic restart
1:  Acknowledge all faults without restarting
4:  Restart after line supply failure w/o additional start attempts
6:  Restart after fault with additional start attempts
14: Restart after line supply failure following man. acknowledgment
16: Restart after fault following manual acknowledgment
26: Acknowledging all faults and reclosing for an ON command

Dependency:  The automatic restart requires an active ON command (e.g., via a digital input). If, for p1210 > 1, there is no active ON command, then the automatic restart is interrupted.
When using an Operator Panel in the LOCAL mode, then there is no automatic start.
For p1210 = 14, 16, a manual acknowledgement is required for an automatic restart.
Refer to: p0840, p0857
Refer to: F30003

Danger:  If the automatic restart is activated (p1210 > 1) if there is an ON command (refer to p0840), the drive is powered up as soon as any fault messages that are present can be acknowledged. This also occurs after the line supply returns or the Control Unit boots if the DC link voltage is present again. This automatic power-up sequence can only be interrupted by withdrawing the ON command.

Caution:  A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1). When faults are present, therefore, the parameter cannot be changed.
For p1210 > 1, the motor is automatically started.

Note:
Re p1210 = 1:
Faults that are present are automatically acknowledged. If new faults occur after a successful fault acknowledgment, then these are also automatically acknowledged again. p1211 has no influence on the number of acknowledgment attempts.
Re p1210 = 4:
An automatic restart is only performed if fault F30003 has occurred on the power unit. If additional faults are present, then these faults are also acknowledged and when successful, starting continues. If the 24 V Control Unit power supply fails, then this is interpreted as a line supply failure.
Re p1210 = 6:
An automatic restart is carried out if any fault has occurred.
Re p1210 = 14:
As for p1210 = 4. However, faults that are present must be manually acknowledged.

Re p1210 = 16:
As for p1210 = 6. However, faults that are present must be manually acknowledged.

Re p1210 = 26:
The same as for p1210 = 6. For this mode, the switch-on command can be entered with a delay. To restart after the line supply returns or after acknowledging faults, the switch-on command must be set within the monitoring time (p1213[0]), otherwise fault F07320 will be output. The restart is interrupted with either OFF2 or OFF3.

**p1211 Automatic restart, start attempts / AR start attempts**

| Access level: | 3 |
| Calculated: | - |
| Can be changed: | U, T |
| Scaling: | - |
| Units group: | - |
| Unit selection: | - |

**Min** | **Max** | **Factory setting**
--- | --- | ---
0 | 10 | 3

**Description:**
Sets the start attempts of the automatic restart function for p1210 = 4, 6, 14, 16, 26.

**Dependency:**
Refer to: p1210, r1214
Refer to: F07320

**Caution:**
A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

**Notice:**
After fault F07320 occurs, the power-on command must be withdrawn and all of the faults acknowledged so that the automatic restart function is re-activated.

After a complete power failure the start counter always starts with the counter value that applied before the power failure, and decrements this start attempt by 1. If a further attempt to acknowledge is started by the automatic restart function prior to power failure, e.g. when the CU remains active on power failure longer than the time p1212 / 2, the fault counter will already have been decremented once. In this case, the start counter is thus decreased by the value 2.

**Note:**
A start attempt starts immediately when a fault occurs. The start attempt is considered to been completed if the motor was magnetized (r0056.4 = 1) and an additional delay time of 1 s has expired.

As long as a fault is present, an acknowledge command is generated in the time intervals of p1212 / 2. When successfully acknowledged, the start counter is decremented. If, after this, a fault re-occurs before a restart has been completed, then acknowledgement starts again from the beginning.

Fault F07320 is output if, after several faults occur, the number of parameterized start attempts has been reached.

After a successful start attempt, i.e. a fault/error has no longer occurred up to the end of the magnetizing phase, the start counter is again reset to the parameter value after 1 s. If a fault re-occurs - the parameterized number of start attempts is again available.

At least one start attempt is always carried out.

After a line supply failure, acknowledgement is immediate and when the line supply returns, the system is powered up. If, between successfully acknowledging the line fault and the line supply returning, another fault occurs, then its acknowledgement also causes the start counter to be decremented.

For p1210 = 26, the start counter is decremented if after a successful fault acknowledgement, the on command is present.

**p1212 Automatic restart, delay time start attempts / AR t_wait start**

| Access level: | 3 |
| Calculated: | - |
| Can be changed: | U, T |
| Scaling: | - |
| Units group: | - |
| Unit selection: | - |

**Min** | **Max** | **Factory setting**
--- | --- | ---
0.1 [s] | 1000.0 [s] | 1.0 [s]

**Description:**
Sets the delay time up to restart.

**Dependency:**
This parameter setting is active for p1210 = 4, 6, 26.

For p1210 = 1, the following applies:
Faults are only automatically acknowledged in half of the waiting time, no restart.
Refer to: p1210, r1214

**Caution:**
A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).
**Parameters**

**Parameter list**

**Note:**

The faults are automatically acknowledged after half of the delay time has expired and the full delay time. If the cause of a fault is not removed in the first half of the delay time, then it is no longer possible to acknowledge in the delay time.

**p1213[0...1]**  
**Automatic restart, monitoring time / AR t_monit**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>Data set:</td>
</tr>
<tr>
<td>Units group:</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>0.0 [s]</td>
<td>10000.0 [s]</td>
<td>[0] 60.0 [s]</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>[1] 0.0 [s]</td>
</tr>
</tbody>
</table>

**Description:**

Sets the monitoring time of the automatic restart (AR).

**Index:**

[0] = Restart  
[1] = Reset start counter

**Dependency:**

Refer to: p1210, r1214

**Caution:**

A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

**Notice:**

After fault F07320 occurs, the power-on command must be withdrawn and all of the faults acknowledged so that the automatic restart function is re-activated.

**Note:**

Index 0:

The monitoring time starts when the faults are detected. If the automatic acknowledgements are not successful, the monitoring time runs again. If, after the monitoring time has expired, the drive has still not successfully started again (flying restart and magnetizing of the motor must have been completed: r0056.4 = 1), then fault F07320 is output.

The monitoring is de-activated with p1213 = 0. If p1213 is set lower than the sum of p1212, the magnetizing time p0346 and the additional delay time due to the flying restart, then fault F07320 is generated at each restart. If, for p1210 = 1, the time in p1213 is set lower than in p1212, then fault F07320 is also generated at each restart.

The monitoring time must be extended if the faults that occur cannot be immediately and successfully acknowledged (e.g. for faults that are permanently present).

In the case of p1210 = 14, 16, the faults which are present must be acknowledged manually within the time in p1213[0]. Otherwise, fault F07320 is generated after the set time.

Index 1:

The start counter (refer to r1214) is only set back to the starting value p1211 if, after successful restart, the time in p1213[1] has expired. The delay time is not effective for fault acknowledgement without automatic restart (p1210 = 1). After a power failure (blackout) the delay time only starts after the line supply returns and the Control Unit boots.

The start counter is set to p1211, if F07320 occurred, the power-on command is withdrawn and the fault is acknowledged.

The start counter is immediately updated if the starting value p1211 or the mode p1210 is changed.

For p1210 = 26, the fault must have been successfully acknowledged and the switch-on command issued within the time in p1213[0]. Otherwise, fault F07320 is generated after the set time.

**r1214.0...15**  
**CO/BO: Automatic restart, status / AR status**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
<th>Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>Data set:</td>
</tr>
<tr>
<td>Units group:</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 status of the automatic restart (AR).

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Initialization</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Wait for alarm</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Auto restart act</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Setting the acknowledgement command</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Acknowledge alarms</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Restart</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Delay time running after automatic power-up</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
Note:
Re bit 00:
State to display the single initialization after POWER ON.
Re bit 01:
State in which the automatic restart function waits for faults (initial state).
Re bit 02:
General display that a fault has been identified and that the restart or acknowledgement has been initiated.
Re bit 03:
Displays the acknowledge command within the "acknowledge alarms" state (bit 4 = 1). For bit 5 = 1 or bit 6 = 1, the acknowledge command is continually displayed.
Re bit 04:
State in which the faults that are present are acknowledged. The state is exited again after successful acknowledgement. A change is only made into the next state if it is signaled that a fault is no longer present after an acknowledgement command (bit 3 = 1).
Re bit 05:
State in which the drive is automatically powered up (only for p1210 = 4, 6).
Re bit 06:
State in which the system waits after having been powered up, to the end of the start attempt (to the end of the magnetizing process).
For p1210 = 1, this signal is directly set after the faults have been successfully acknowledged.
Re bit 07:
State which is assumed after a fault occurs within the automatic restart function. This is only reset after acknowledging the fault and withdrawing the power-on command.
Re bit 10:
When the automatic restart function is active, r1214 bit 7 is displayed, otherwise the effective fault r2139 bit 3.
Re bits 12 ... 15:
Actual state of the start counter (binary coded).
In addition to bit 04:
For p1210 = 26, the system waits in this state until the switch-on command is available.

<table>
<thead>
<tr>
<th>p1215</th>
<th>Motor holding brake configuration / Brake config</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM230</td>
<td>0: No motor holding brake available</td>
</tr>
<tr>
<td></td>
<td>3: Motor holding brake like sequence control, connection via BICO</td>
</tr>
</tbody>
</table>

Description: Sets the holding brake configuration.
Value: 0: No motor holding brake available
3: Motor holding brake like sequence control, connection via BICO
Dependency: Refer to: p1216, p1217, p1226, p1227, p1228
Caution: For the setting p1215 = 0, if a brake is used, it remains closed. If the motor moves, this will destroy the brake.
Notice: If p1215 was set to 3, then when the pulses are suppressed, the brake is closed even if the motor is still rotating. Pulse suppression can either be caused by a 0 signal at p0844, p0845 or p0852 or as a result of a fault with OFF2 response. If this is not desirable (e.g. for a flying restart), then the brake can be kept open using a 1 signal at p0855.
Note: if an external motor holding brake is being used, then p1215 should be set to 3 and r0899.12 should be interconnected as control signal.
The parameter can only be set to zero when the pulses are inhibited.
### Parameters

#### Parameter list

**p1215**  
**Motor holding brake configuration / Brake config**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>2</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the holding brake configuration.

**Value:**  
0: No motor holding brake available  
1: Motor holding brake acc. to sequence control  
2: Motor holding brake always open  
3: Motor holding brake like sequence control, connection via BICO

**Dependency:**  
Refer to: p1215, p1217, p1226, p1227, p1228

**Caution:**  
For the setting p1215 = 0, if a brake is used, it remains closed. If the motor moves, this will destroy the brake.

**Notice:**  
If p1215 was set to 1 or if p1215 was set to 3, then when the pulses are suppressed, the brake is closed even if the motor is still rotating. Pulse suppression can either be caused by a 0 signal at p0844, p0845 or p0852 or as a result of a fault with OFF2 response. If this is not desirable (e.g. for a flying restart), then the brake can be kept open using a 1 signal at p0855.

**Note:**  
If a holding brake integrated in the motor is used, then it is not permissible that p1215 is set to 3.  
If an external motor holding brake is being used, then p1215 should be set to 3 and r0899.12 should be interconnected as control signal.  
The parameter can only be set to zero when the pulses are inhibited.

**p1216**  
**Motor holding brake, opening time / Brake t_open**

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<th>Min</th>
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</thead>
<tbody>
<tr>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td>100 [ms]</td>
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</tbody>
</table>

**Description:**  
Sets the time to open the motor holding brake.  
After the holding brake has been controlled (opened), the speed setpoint remains at zero for this time. After this, the speed setpoint is enabled.

**Dependency:**  
Refer to: p1215, p1217

**Note:**  
For a motor with DRIVE-CLiQ and integrated brake, for p0300 = 10000, this time is pre-assigned the value saved in the motor.

**p1217**  
**Motor holding brake closing time / Brake t_close**

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<thead>
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<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td>100 [ms]</td>
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</table>

**Description:**  
Sets the time to apply the motor holding brake.  
After OFF1 or OFF3 and the controlling (closing) of the holding brake, the drive remains stationary under closed-loop control for this time with a speed setpoint of zero. The pulses are suppressed when the time expires.

**Dependency:**  
Refer to: p1215, p1216

**Notice:**  
If the selected closing time is too short with respect to the actual closing time of the brake, then the load can sag.  
If the closing time is selected to be too long with respect to the actual closing time of the brake, the control works against the brake and therefore reduces its lifetime.

**Note:**  
For a motor with DRIVE-CLiQ and integrated brake, for p0300 = 10000, this time is pre-assigned the value saved in the motor.
**p1226[0...n]**

**Threshold for zero speed detection / n_standst n_thresh**

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<td>0.00 [rpm]</td>
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<td>210000.00 [rpm]</td>
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</table>

**Description:**
Sets the speed threshold for the standstill identification. Acts on the actual value and setpoint monitoring.

When braking with OFF1 or OFF3, when the threshold is undershot, standstill is identified.

**Dependency:**
Refer to: p1227

**Note:**
Standstill is identified in the following cases:
- the speed actual value falls below the speed threshold in p1226 and the time started after this in p1228 has expired.
- the speed setpoint falls below the speed threshold in p1226 and the time started after this in p1227 has expired.
The actual value sensing is subject to measuring noise. For this reason, standstill cannot be detected if the speed threshold is too low.

---

**p1227**

**Zero speed detection monitoring time / n_standst t_monit**

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<tr>
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<td>0.000 [s]</td>
<td>Max</td>
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</table>

**Description:**
Sets the monitoring time for the standstill identification.

When braking with OFF1 or OFF3, standstill is identified after this time has expired, after the setpoint speed has fallen below p1226 (also refer to p1145).

**Dependency:**
The parameter is pre-assigned depending on the size of the power unit.

Refer to: p1226

**Notice:**
For p1145 > 0.0 (RFG tracking) the setpoint is not equal to zero dependent on the selected value. This can therefore cause the monitoring time in p1227 to be exceeded. In this case, for a driven motor, the pulses are not suppressed.

**Note:**
Standstill is identified in the following cases:
- the speed actual value falls below the speed threshold in p1226 and the time started after this in p1228 has expired.
- the speed setpoint falls below the speed threshold in p1226 and the time started after this in p1227 has expired.

For p1227 = 300.000 s, the following applies:
Monitoring is de-activated.

For p1227 = 0.000 s, the following applies:
With OFF1 or OFF3 and a ramp-down time = 0, the pulses are immediately suppressed and the motor "coasts" down.

Once the Control Unit has been booted up for the first time or if the factory settings have been defined accordingly, the parameter is defined in accordance with the power unit.

---

**p1228**

**Pulse suppression delay time / Pulse suppr t_del**

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<td>Units group:</td>
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<td>-</td>
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<tr>
<td>Min</td>
<td>0.000 [s]</td>
<td>Max</td>
<td>299.000 [s]</td>
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</tbody>
</table>

**Description:**
Sets the delay time for pulse suppression.
After OFF1 or OFF3, the pulses are canceled, if at least one of the following conditions is fulfilled:
- the speed actual value falls below the threshold in p1226 and the time started after this in p1228 has expired.
- the speed setpoint falls below the threshold in p1226 and the time started after this in p1227 has expired.

**Dependency:**
Refer to: p1226, p1227

**Notice:**
When the motor holding brake is activated, pulse cancellation is additionally delayed by the brake closing time (p1217).

### p1230[0...n]
**BI: DC braking activation / DC brake act**

- **Access level:** 2
- **Can be changed:** U, T
- **Units group:** -
- **Min:** -
- **Max:** -
- **Factory setting:** 0

**Description:**
Sets the signal source to activate DC braking.

**Dependency:**
Refer to: p1231, p1232, p1233, p1234, r1239

**Note:**
1 signal: DC braking activated.
0 signal: DC braking de-activated.

### p1231[0...n]
**DC braking configuration / DCBRK config**

- **Access level:** 2
- **Can be changed:** U, T
- **Units group:** -
- **Min:** 0
- **Max:** 14
- **Factory setting:** 0

**Description:**
Setting to activate DC braking.

**Value:**
0: No function
4: DC braking
5: DC braking for OFF1/OFF3
14: DC braking below starting speed

**Dependency:**
Refer to: p0300, p1232, p1233, p1234, r1239

**Note:**
Re p1231 = 4:
The function is activated as soon as the activation criterion is fulfilled.
- the function can be superseded by an OFF2 response.
Activation criterion (one of the following criteria is fulfilled):
- binector input p1230 = 1 signal (DC braking activation).
- the drive is not in the state "S4: Operation" or in "SSx" (refer to function diagram 2610).
- the internal pulse enable is missing (r0046.19 = 0).
The function can only be used for induction motors (p0300 = 1).
DC braking can only be withdrawn (p1231 = 0) if it is not being used as a fault response in p2101.
Re p1231 = 5:
DC braking can only be set for induction motors.
DC braking is activated if the OFF1 or OFF3 command is present. Binector input p1230 is ineffective. If the drive speed still lies above the speed threshold p1234, then initially, the drive is ramped-down to this threshold, demagnetized (see p0347) and is then switched into DC braking for the time set in p1233. After this, the drive is switched-off. If, at OFF1, the drive speed is below p1234, then it is immediately demagnetized and switched into DC braking. A change is made into normal operation if the OFF1 command is withdrawn prematurely. Flying restart must be activated if the motor is still rotating.
DC braking by means of fault response continues to be possible.
Re p1231 = 14:
In addition to the function for p1231 = 5, binector input p1230 is evaluated.
DC braking is only automatically activated when the speed threshold p1234 is fallen below if binector input p1230 = 1 signal.
Notice:
This is also the case, if no OFF command is present. After demagnetization and after the time in p1233 has expired, the drive changes back into normal operation or is switched-off (for OFF1/OFF3).
If a 0 signal is applied to binector input p1230, for OFF1 and OFF3 no DC braking is executed.

Note:
DCBRK: DC Braking

### p1232[0...n] DC braking, braking current / DCBRK I_brake

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<tr>
<td>Min</td>
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<td>Max</td>
<td>10000.00 [Arms]</td>
<td>Factory setting</td>
<td>0.00 [Arms]</td>
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</table>

**Description:**
Sets the braking current for DC braking.

**Dependency:**
Refer to: p1230, p1231, p1233, p1234, r1239, p1345, p1346

**Note:**
A change to the braking current becomes effective the next time that DC braking is switched on.
The value for p1232 is specified as an rms value in the 3-phase system. The magnitude of the braking current is the same as that of an identical output current at frequency zero (see r0067, r0068, p0640). The braking current is internally limited to r0067.
For the current controller, the settings of parameters p1345 and p1346 (i_max limiting controller) are used.

### p1233[0...n] DC braking time / DCBRK time

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<td>Max</td>
<td>3600.0 [s]</td>
<td>Factory setting</td>
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</table>

**Description:**
Sets the DC braking time (as fault response).

**Dependency:**
Refer to: p1230, p1231, p1232, p1234, r1239

### p1234[0...n] Speed at the start of DC braking / DCBRK n_start

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<td>Factory setting</td>
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</table>

**Description:**
Sets the starting speed for DC braking.
If the actual speed falls below this threshold, then DC braking is activated.

**Dependency:**
Refer to: p1230, p1231, p1232, p1233, r1239

### r1239.8...13 CO/BO: DC braking status word / DCBRK ZSW

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<td>-</td>
<td>Max</td>
<td>-</td>
<td>Factory setting</td>
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**Description:**
Status word of the DC braking.

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<th>FP</th>
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Parameters

Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
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- the ramp-down times are automatically increased.

p1240 = 2, 3:
When the switch-in threshold of the Vdc_min controller is reached (p1245), the following applies:
- the Vdc_min controller limits the energy taken from the DC link in order to keep the DC link voltage above the minimum DC link voltage when accelerating.
- the motor is braked in order to use its kinetic energy to buffer the DC link.

If a braking resistor is connected to the DC link (p0219 > 0), then the Vdc_max control is automatically deactivated.

### r1242 Vdc_max controller switch-in level / Vdc_max on_level

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**Description:** Displays the switch-in level for the Vdc_max controller.

If p1254 = 0 (automatic sensing of the switch-in level = off), then the following applies:
r1242 = 1.15 * sqrt(2) * p0210 (supply voltage)
PM230: r1242 is limited to Vdc_max - 50.0 V.
If p1254 = 1 (automatic sensing of the switch-in level = on), then the following applies:
r1242 = Vdc_max - 50.0 V (Vdc_max: Overvoltage threshold of the power unit)
r1242 = Vdc_max - 25.0 V (for 230 V power units)

**Note:** The Vdc_max controller is not switched back off until the DC-link voltage falls below the threshold 0.95 * p1242 and the controller output is zero.

### p1243[0...n] Vdc_max controller dynamic factor / Vdc_max dyn_factor

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<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
</tbody>
</table>

**Description:** Sets the dynamic factor for the DC link voltage controller (Vdc_max controller).

100% means that p1250, p1251, and p1252 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization.

If subsequent optimization is required, this can be carried out using the dynamic factor. In this case p1250, p1251, p1252 are weighted with the dynamic factor p1243.

### p1245[0...n] Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

<table>
<thead>
<tr>
<th>PM230</th>
<th>PM240</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
</tbody>
</table>

**Description:** Sets the switch-in level for the Vdc-min controller (kinetic buffering).

The value is obtained as follows:
r1246[V] = p1245[%) * sqrt(2) * p0210

**Dependency:** Refer to: p0210

**Warning:** An excessively high value may adversely affect normal drive operation.
## Parameters

### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level</th>
</tr>
</thead>
</table>
| **p1245[0...n]**<br>PM240 | **Description:**
Sets the switch-in level for the Vdc-min controller (kinetic buffering). The value is obtained as follows:
\[
r1246[V] = p1245[%] \times \sqrt{2} \times p0210
\]
**Dependency:**
Refer to: p0210
**Warning:**
An excessively high value may adversely affect normal drive operation. |
| **r1246**<br>PM230 PM240 | **Description:**
Displays the switch-in level for the Vdc_min controller (kinetic buffering). |
| **p1247[0...n]**<br>PM230 PM240 | **Description:**
Sets the dynamic factor for the Vdc_min controller (kinetic buffering). 100% means that p1250, p1251, and p1252 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization. If subsequent optimization is required, this can be carried out using the dynamic factor. In this case p1250, p1251, p1252 are weighted with the dynamic factor p1247. |
| **p1249[0...n]**<br>PM230 PM240 | **Description:**
Sets the lower speed threshold for the Vdc_max controller. When this speed threshold is undershot, the Vdc_max control is switched out and the speed is controlled using the ramp-function generator. |

### p1245[0...n] Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

| Access level: 3 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: U, T | Scaling: - | Data set: DDS, p0180 |
| Units group: - | Unit selection: - |
| Min 65 [%] | Max 150 [%] | Factory setting 76 [%] |

### r1246 Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

| Access level: 3 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: - | Scaling: p2001 | Data set: - |
| Units group: - | Unit selection: - |
| Min - [V] | Max - [V] | Factory setting - [V] |

### p1247[0...n] Vdc_min controller dynamic factor (kinetic buffering) / Vdc_min dyn_factor

| Access level: 3 | Calculated: p0340 = 1,3,4 | Data type: FloatingPoint32 |
| Can be changed: U, T | Scaling: - | Data set: DDS, p0180 |
| Units group: - | Unit selection: - |
| Min 1 [%] | Max 10000 [%] | Factory setting 300 [%] |

### p1249[0...n] Vdc_max controller speed threshold / Vdc_max n_thresh

| Access level: 3 | Calculated: p0340 = 1 | Data type: FloatingPoint32 |
| Can be changed: U, T | Scaling: - | Data set: DDS, p0180 |
| Units group: 3_1 | Unit selection: p0505 |
| Min 0.00 [rpm] | Max 210000.00 [rpm] | Factory setting 10.00 [rpm] |
### Parameter List

#### p1250[0...n]  Vdc controller proportional gain / Vdc_ctrl Kp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1250[0...n]</td>
<td>Vdc controller proportional gain / Vdc_ctrl Kp</td>
<td>0.00</td>
<td>100.00</td>
</tr>
</tbody>
</table>

#### p1251[0...n]  Vdc controller integral time / Vdc_ctrl Tn

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1251[0...n]</td>
<td>Vdc controller integral time / Vdc_ctrl Tn</td>
<td>0 [ms]</td>
<td>10000 [ms]</td>
</tr>
</tbody>
</table>

#### p1252[0...n]  Vdc controller rate time / Vdc_ctrl t_rate

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1252[0...n]</td>
<td>Vdc controller rate time / Vdc_ctrl t_rate</td>
<td>0 [ms]</td>
<td>10000 [ms]</td>
</tr>
</tbody>
</table>

#### p1254  Vdc_max controller automatic ON level detection / Vdc_max SenseOnLev

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1254[0...n]</td>
<td>Vdc_max controller automatic ON level detection / Vdc_max SenseOnLev</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

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### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1255[0...n]</strong></td>
<td>Vdc_min controller time threshold / Vdc_min t_thresh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM230</td>
<td>Access level: 3</td>
<td>Calculated:</td>
<td>Data type: FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>PM240</td>
<td>Can be changed: U, T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.000 [s]</td>
<td>Max</td>
<td>1800.000 [s]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.000 [s]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the time threshold for the Vdc_min controller (kinetic buffering).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If this value is exceeded a fault is output; the required response can be parameterized.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prerequisite:</strong></td>
<td>p1256 = 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: F07406</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notice:</strong></td>
<td>If a time threshold has been parameterized, the Vdc_max controller should also be activated (p1240 = 3) so that the drive does not shut down with overvoltage when Vdc_min control is exited (due to the time violation) and in the event of fault response OFF3. It is also possible to increase the OFF3 ramp-down time p1135.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p1256[0...n]</strong></td>
<td>Vdc_min controller response (kinetic buffering) / Vdc_min response</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM230</td>
<td>Access level: 3</td>
<td>Calculated:</td>
<td>Data type: Integer16</td>
<td></td>
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<tr>
<td>PM240</td>
<td>Can be changed: U, T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>Max</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the response for the Vdc_min controller (kinetic buffering).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Value:</strong></td>
<td>0: Buffer Vdc until undervoltage, n&lt;p1257 -&gt; F07405</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1: Buff. Vdc until undervolt., n&lt;p1257 -&gt; F07405, t&gt;p1255 -&gt; F07406</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: F07405, F07406</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p1257[0...n]</strong></td>
<td>Vdc_min controller speed threshold / Vdc_min n_thresh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM230</td>
<td>Access level: 3</td>
<td>Calculated: p0340 = 1</td>
<td>Data type: FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>PM240</td>
<td>Can be changed: U, T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group: 3_1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [rpm]</td>
<td>Max</td>
<td>210000.00 [rpm]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>50.00 [rpm]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the speed threshold for the Vdc-min controller (kinetic buffering).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If this value is exceeded a fault is output; the required response can be parameterized.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r1258</strong></td>
<td>CO: Vdc controller output / Vdc_ctrl output</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM230</td>
<td>Access level: 3</td>
<td>Calculated:</td>
<td>Data type: FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>PM240</td>
<td>Can be changed:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group: 6_2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [Arms]</td>
<td>Max</td>
<td>- [Arms]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [Arms]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Displays the actual output of the Vdc controller (DC link voltage controller)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The regenerative power limit p1531 is used for vector control to pre-control the Vdc_max controller. The lower the power limit is set, the lower the correction signals of the controller when the voltage limit is reached.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p1280[0...n]</strong></td>
<td>Vdc controller configuration (U/f) / Vdc_ctr config U/f</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM230</td>
<td>Access level: 3</td>
<td>Calculated:</td>
<td>Data type: Integer16</td>
<td></td>
</tr>
<tr>
<td>PM240</td>
<td>Can be changed: U, T</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>Max</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the configuration of the controller for the DC link voltage (Vdc controller) in the U/f operating mode.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### p1280[0...n]

**Vdc controller configuration (U/f) / Vdc_ctr config U/f**

**Description:**
Sets the configuration of the controller for the DC link voltage (Vdc controller) in the U/f operating mode.

**Value:**
0: Inhib Vdc ctrl
1: Vdc_max controller enable
2: Vdc_min controller (kinetic buffering) enable
3: Vdc_min controller and Vdc_max controller enable

**Note:**
For high input voltages (see p0210), the following settings can improve the degree of ruggedness of the Vdc_max controller:
- Set the input voltage p0210 as low as possible (in so doing avoid A07401).
- Set the rounding times (p1130, p1136).
- Increase the ramp-down times (p1121).
- Reduce the integral time of the controller (p1291) (factor 0.5).
- Activate the Vdc correction in the current controller (p1810 bit 1 = 1) or reduce the derivative action time of the controller (p1292) (factor 0.5).

In this case, we generally recommend to use vector control (p1300 = 20) (Vdc controller, see p1240).

### r1282

**Vdc_max controller switch-in level (U/f) / Vdc_max on_level**

**Description:**
Displays the switch-in level for the Vdc_max controller.

If \( p1294 = 0 \) (automatic sensing of the switch-in level = off), then the following applies:
\[
r1282 = 1.15 \times sq(2) \times p0210 \text{ (supply voltage)}
\]
If \( p1294 = 1 \) (automatic sensing of the switch-in level = on), then the following applies:
\[
r1282 = V\text{dc}_\text{max} - 50.0 \text{ V (Vdc_max: Overvoltage threshold of the power unit)}
r1282 = V\text{dc}_\text{max} - 25.0 \text{ V (for 230 V power units)}
\]

**Note:**
The Vdc_max controller is not switched back off until the DC-link voltage falls below the threshold 0.95 * p1282 and the controller output is zero.
**Parameters**

**Parameter list**

<table>
<thead>
<tr>
<th>p1283[0...n]</th>
<th>Vdc_max controller dynamic factor (U/f) / Vdc_max dyn_factor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PM230</strong></td>
<td>Access level: 3</td>
</tr>
<tr>
<td>PM240</td>
<td>Calculated: p0340 = 1,3,4</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
</tr>
<tr>
<td>1 [%]</td>
<td>10000 [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>100 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the dynamic factor for the DC link voltage controller (Vdc_max controller).
100% means that p1290, p1291, and p1292 (gain, integral time, and rate time) are used in accordance with their basic settings and on the basis of a theoretical controller optimization.
If subsequent optimization is required, this can be carried out using the dynamic factor. In this case, p1290, p1291, and p1292 are weighted with the dynamic factor p1283.

<table>
<thead>
<tr>
<th>p1285[0...n]</th>
<th>Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PM240</strong></td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
</tr>
<tr>
<td>65 [%]</td>
<td>150 [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>76 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the switch-in level for the Vdc-min controller (kinetic buffering).
The value is obtained as follows:
p1286[V] = p1285[%] * sqrt(2) * p0210

**Warning:**
An excessively high value may adversely affect normal drive operation.

<table>
<thead>
<tr>
<th>r1286</th>
<th>Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PM240</strong></td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Calculated: -</td>
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<tr>
<td>Units group: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
</tr>
<tr>
<td>- [V]</td>
<td>- [V]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [V]</td>
</tr>
</tbody>
</table>

**Description:**
Displays the switch-in level for the Vdc_min controller (kinetic buffering).
**Note:**
The Vdc_min controller is not switched back off until the DC-link voltage rises above the threshold 1.05 * p1286 and the controller output is zero.

<table>
<thead>
<tr>
<th>p1287[0...n]</th>
<th>Vdc_min controller dynamic factor (kinetic buffering) (U/f) / Vdc_min dyn_factor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PM240</strong></td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Calculated: p0340 = 1,3,4</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
</tr>
<tr>
<td>1 [%]</td>
<td>10000 [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>100 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the dynamic factor for the Vdc_min controller (kinetic buffering).
100% means that p1290, p1291, and p1292 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization.
If subsequent optimization is required, this can be carried out using the dynamic factor. In this case, p1290, p1291, and p1292 are weighted with the dynamic factor p1287.
### Parameters

#### p1288[0...n] Vdc_max controller feedback coupling factor ramp-fct. gen. (U/f) / Vdc_max factor RFG

- **Access level:** 4  
- **Calculated:** -  
- **Can be changed:** U, T  
- **Scaling:** -  
- **Units group:** -  
- **Unit selection:** -  
- **Min:** 0.000  
- **Max:** 100.000  
- **Data type:** FloatingPoint32  
- **Factory setting:** 0.500

**Description:**
Sets the feedback factor for the ramp-function generator. Its ramp times are decelerated relative to the output signal of the Vdc_max controller.

**Note:**
For values p1288 = 0.0 to 0.5, the controller dynamics are automatically adapted internally.

#### p1290[0...n] Vdc controller proportional gain (U/f) / Vdc_ctrl Kp

- **PM230**  
  - **Access level:** 3  
  - **Calculated:** p0340 = 1,3,4  
  - **Can be changed:** U, T  
  - **Scaling:** -  
  - **Units group:** -  
  - **Unit selection:** -  
  - **Min:** 0.00  
  - **Max:** 100.00  
  - **Data type:** FloatingPoint32  
  - **Data set:** DDS, p0180  
  - **Factory setting:** 1.00

- **PM240**  
  - **Access level:** 3  
  - **Calculated:** p0340 = 1,3,4  
  - **Can be changed:** U, T  
  - **Scaling:** -  
  - **Units group:** -  
  - **Unit selection:** -  
  - **Min:** 0.00  
  - **Max:** 100.00  
  - **Data type:** FloatingPoint32  
  - **Data set:** DDS, p0180  
  - **Factory setting:** 1.00

**Description:**
Sets the proportional gain for the Vdc controller (DC link voltage controller).

**Note:**
The gain factor is proportional to the capacitance of the DC link. The parameter is pre-set to a value that is optimally adapted to the capacitance of the power unit.

#### p1291[0...n] Vdc controller integral time (U/f) / Vdc_ctrl Tn

- **PM230**  
  - **Access level:** 3  
  - **Calculated:** -  
  - **Can be changed:** U, T  
  - **Scaling:** -  
  - **Units group:** -  
  - **Unit selection:** -  
  - **Min:** 0 [ms]  
  - **Max:** 10000 [ms]  
  - **Data type:** FloatingPoint32  
  - **Data set:** DDS, p0180  
  - **Factory setting:** 40 [ms]

- **PM240**  
  - **Access level:** 3  
  - **Calculated:** -  
  - **Can be changed:** U, T  
  - **Scaling:** -  
  - **Units group:** -  
  - **Unit selection:** -  
  - **Min:** 0 [ms]  
  - **Max:** 10000 [ms]  
  - **Data type:** FloatingPoint32  
  - **Data set:** DDS, p0180  
  - **Factory setting:** 40 [ms]

**Description:**
Sets the integral time for the Vdc controller (DC link voltage controller).

#### p1292[0...n] Vdc controller rate time (U/f) / Vdc_ctrl t_rate

- **PM230**  
  - **Access level:** 3  
  - **Calculated:** p0340 = 1,3,4  
  - **Can be changed:** U, T  
  - **Scaling:** -  
  - **Units group:** -  
  - **Unit selection:** -  
  - **Min:** 0 [ms]  
  - **Max:** 1000 [ms]  
  - **Data type:** FloatingPoint32  
  - **Data set:** DDS, p0180  
  - **Factory setting:** 10 [ms]

- **PM240**  
  - **Access level:** 3  
  - **Calculated:** p0340 = 1,3,4  
  - **Can be changed:** U, T  
  - **Scaling:** -  
  - **Units group:** -  
  - **Unit selection:** -  
  - **Min:** 0 [ms]  
  - **Max:** 1000 [ms]  
  - **Data type:** FloatingPoint32  
  - **Data set:** DDS, p0180  
  - **Factory setting:** 10 [ms]

**Description:**
Sets the rate time constant for the Vdc controller (DC link voltage controller).

#### p1293[0...n] Vdc min controller output limit (U/f) / Vdc_min outp_lim

- **PM240**  
  - **Access level:** 4  
  - **Calculated:** p0340 = 1,3,4  
  - **Can be changed:** U, T  
  - **Scaling:** -  
  - **Units group:** -  
  - **Unit selection:** -  
  - **Min:** 0.00 [Hz]  
  - **Max:** 600.00 [Hz]  
  - **Data type:** FloatingPoint32  
  - **Data set:** DDS, p0180  
  - **Factory setting:** 600.00 [Hz]

**Description:**
Sets the output limit for the Vdc min controller (DC link undervoltage controller).
### Description:
Activates/de-activates the automatic sensing of the switch-in level for the Vdc_max controller. When the sensing function is de-activated, the activation threshold r1282 for the Vdc_max controller is determined from the parameterized connection voltage p0210.

### Value:
- 0: Automatic detection inhibited
- 1: Automatic detection enabled

### Notice:
If a time threshold has been parameterized, the Vdc_max controller should also be activated (p1280 = 3) so that the drive does not shut down with overvoltage when Vdc_min control is exited (due to the time violation) and in the event of fault response OFF3. It is also possible to increase the OFF3 ramp-down time p1135.

### Description:
Sets the time threshold for the Vdc_min controller (kinetic buffering). If this value is exceeded a fault is output; the required response can be parameterized.

### Prerequisite:
p1296 = 1.

### Notice:
If a time threshold has been parameterized, the Vdc_max controller should also be activated (p1280 = 3) so that the drive does not shut down with overvoltage when Vdc_min control is exited (due to the time violation) and in the event of fault response OFF3. It is also possible to increase the OFF3 ramp-down time p1135.

### Description:
Sets the response for the Vdc_min controller (kinetic buffering).

### Value:
- 0: Buffer Vdc until undervoltage, n<p1297 -> F07405
- 1: Buff. Vdc until undervolt., n<p1297 -> F07405, t>p1295 -> F07406

### Notice:
Re p1296 = 1:
The quick stop ramp entered in p1135 must not be equal to zero, to prevent overcurrent shutdown if F07406 is triggered.

### Description:
Sets the speed threshold for the Vdc_min controller (kinetic buffering).

### Value:
- 0.00 [rpm]
- 50.00 [rpm]
### r1298

**CO: Vdc controller output (U/f) / Vdc_ctrl output**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM230</td>
<td>Display the actual output of the Vdc controller (DC link voltage controller)</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>p2000</td>
<td>-</td>
<td>3_1</td>
<td>p0505</td>
</tr>
<tr>
<td>PM240</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p1300[0...n]

**Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sets the open and closed-loop control mode of a drive.</td>
<td>2</td>
<td>-</td>
<td>Integer16</td>
<td>C(1), T</td>
<td>DDS, p0180</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>U/f control with linear characteristic</td>
</tr>
<tr>
<td>1</td>
<td>U/f control with linear characteristic and FCC</td>
</tr>
<tr>
<td>2</td>
<td>U/f control with parabolic characteristic</td>
</tr>
<tr>
<td>3</td>
<td>U/f control with parameterizable characteristic</td>
</tr>
<tr>
<td>4</td>
<td>U/f control with linear characteristic and ECO</td>
</tr>
<tr>
<td>5</td>
<td>U/f control for drives requiring a precise freq. (e.g. textiles)</td>
</tr>
<tr>
<td>6</td>
<td>U/f control for drives requiring a precise frequency and FCC</td>
</tr>
<tr>
<td>7</td>
<td>U/f control for a parabolic characteristic and ECO</td>
</tr>
<tr>
<td>19</td>
<td>U/f control with independent voltage setpoint</td>
</tr>
<tr>
<td>20</td>
<td>Speed control (encoderless)</td>
</tr>
<tr>
<td>22</td>
<td>Torque control (encoderless)</td>
</tr>
</tbody>
</table>

### Dependency:

- Only operation with U/f characteristic is possible if the rated motor speed is not entered (p0311).
- Operation with a U/f characteristic is not supported for 1LE4 synchronous motors.
- Refer to: p0300, p0311, p0500, p1501

### Notice:

- Active slip compensation is required in the U/f control types with Eco mode (p1300 = 4, 7). The scaling of the slip compensation (p1335) should be set so that the slip is completely compensated (generally 100%).
- The Eco mode is only effective in steady-state operation and when the ramp-function generator is not bypassed. In the case of analog setpoints, if required the tolerance for ramp-up and ramp-down should be actively increased for the ramp-function generator using p1148 in order to reliably signal a steady-state condition.

### Note:

- Only by selecting closed-loop speed control (p1300 = 20) it is possible to change over in operation to closed-loop torque control (p1501). At the changeover, the setting of p1300 does not change. In this case, the actual state is displayed in r1407, bit 2 and bit 3.
- For the open-loop control modes p1300 = 5 and 6 (textile sector), slip compensation p1335, resonance damping p1338, and the Imax frequency controller are switched off internally so that the output frequency can be set precisely. The Imax voltage controller remains active.
- During operation (the pulses enabled) the open-loop/closed-loop control mode cannot be changed by changing over drive data sets.

### p1310[0...n]

**Voltage boost permanent / U_boost perm**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Defines the voltage boost as a [%] referred to the rated motor current (p0305).</td>
<td>2</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>DDS, p0180</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>Defines the voltage boost as a [%] referred to the rated motor current (p0305).</td>
</tr>
</tbody>
</table>

### Dependencies:

- The magnitude of the permanent voltage boost is reduced with increasing frequency so that at the rated motor frequency, the rated motor voltage is present.
The magnitude of the boost in Volt at a frequency of zero is defined as follows:

\[
\text{Voltage boost [V]} = 1.732 \times p0305 \text{ (rated motor current [A])} \times r0395 \text{ (stator/primary section resistance [ohm])} \times p1310 \text{ (permanent voltage boost [%])} / 100 \%
\]

At low output frequencies, there is only a low output voltage in order to maintain the motor flux. However, the output voltage can be too low in order to achieve the following:
- magnetize the induction motor.
- hold the load.
- compensate for losses in the system.

This is the reason that the output voltage can be increased using p1310.

The voltage boost can be used for both linear as well as square-law U/f characteristics.

### Dependency:
The current limit p0640 limits the boost.

For vector control, the permanent voltage boost (p1310) has no effect as the drive converter automatically sets the optimum operating conditions.

Refer to: p1300, p1311, p1312, r1315

### Notice:
The voltage boost increases the motor temperature (particularly at zero speed).

### Note:
The voltage boost is only effective for U/f control (p1300).

The boost values are combined with one another if the permanent voltage boost (p1310) is used in conjunction with other boost parameters (acceleration boost (p1311), voltage boost for starting (p1312)). However, these parameters are assigned the following priorities: p1310 > p1311, p1312

### p1311[0...n] Voltage boost at acceleration / U_boost accelerate

<table>
<thead>
<tr>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min: 0.0 [%]</td>
<td>Max: 250.0 [%]</td>
<td>Factory setting: 0.0 [%]</td>
</tr>
</tbody>
</table>

### Description:
p1311 only results in a voltage boost when accelerating and generates a supplementary torque to accelerate the load.

The voltage boost becomes effective for a positive setpoint increase and disappears as soon as the setpoint has been reached. The build-up and withdrawal of the voltage boost are smoothed.

The magnitude of the boost in Volt at a frequency of zero is defined as follows:

\[
\text{Voltage boost [V]} = 1.732 \times p0305 \text{ (rated motor current [A])} \times r0395 \text{ (stator/primary section resistance [ohm])} \times p1311 \text{ (voltage boost when accelerating [%])} / 100 \%
\]

### Dependency:
The current limit p0640 limits the boost.

Refer to: p1300, p1310, p1312, r1315

### Notice:
The voltage boost results in a higher motor temperature increase.

### Note:
The voltage boost when accelerating can improve the response to small, positive setpoint changes.

Assigning priorities for the voltage boosts: refer to p1310

### p1312[0...n] Voltage boost when starting / U_boost starting

<table>
<thead>
<tr>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min: 0.0 [%]</td>
<td>Max: 250.0 [%]</td>
<td>Factory setting: 0.0 [%]</td>
</tr>
</tbody>
</table>

### Description:
Setting for an additional voltage boost when powering-up, however, only for the first acceleration phase.

The voltage boost becomes effective for a positive setpoint increase and disappears as soon as the setpoint has been reached. The build-up and withdrawal of the voltage boost are smoothed.

### Dependency:
The current limit p0640 limits the boost.

Refer to: p1300, p1310, p1311, r1315

### Notice:
The voltage boost results in a higher motor temperature increase.

### Note:
The voltage boost when accelerating can improve the response to small, positive setpoint changes.

Assigning priorities for the voltage boosts: refer to p1310
**r1315  Voltage boost total / U_boost total**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

**Can be changed:** -

**Units group:** -

**Min:** [Vrms]

**Max:** [Vrms]

**Dependency:** Refer to: p1310, p1311, p1312

**Description:** Displays the total resulting voltage boost in volt.

\[ r1315 = p1310 + p1311 + p1312 \]

**Note:** Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.

**p1320[0...n]  U/f control programmable characteristic frequency 1 / Uf char f1**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>p0340 = 1</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

**Can be changed:** U, T

**Units group:** -

**Min:** 0.00 [Hz]

**Max:** 3000.00 [Hz]

**Dependency:** Selects the freely programmable characteristic using p1300 = 3.

**Description:** The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the voltage of the first point along the characteristic.

The following applies to the frequency values: p1320 <= p1322 <= p1324 <= p1326. Otherwise, a standard characteristic is used that contains the rated motor operating point.

Refer to: p1300, p1310, p1311, p1321, p1322, p1323, p1324, p1325, p1326, p1327

**Note:** Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.

**p1321[0...n]  U/f control programmable characteristic voltage 1 / Uf char U1**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>p0340 = 1</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

**Can be changed:** U, T

**Units group:** -

**Min:** 0.0 [Vrms]

**Max:** 10000.0 [Vrms]

**Dependency:** Selects the freely programmable characteristic using p1300 = 3.

**Description:** The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the voltage of the first point along the characteristic.

Refer to: p1310, p1311, p1320, p1322, p1323, p1324, p1325, p1326, p1327

**Note:** Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.

**p1322[0...n]  U/f control programmable characteristic frequency 2 / Uf char f2**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>p0340 = 1</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

**Can be changed:** U, T

**Units group:** -

**Min:** 0.00 [Hz]

**Max:** 3000.00 [Hz]

**Dependency:** Selects the freely programmable characteristic using p1300 = 3.

**Description:** The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the voltage of the second point along the characteristic.

The following applies to the frequency values: p1320 <= p1322 <= p1324 <= p1326. Otherwise, a standard characteristic is used that contains the rated motor operating point.

Refer to: p1310, p1311, p1320, p1321, p1323, p1324, p1325, p1326, p1327
### p1323[0...n] U/f control programmable characteristic voltage 2 / Uf char U2

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1323</td>
<td>3</td>
<td>p0340 = 1</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [Vrms]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>10000.0 [Vrms]</td>
<td>0.0 [Vrms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the voltage of the second point along the characteristic.

**Dependency:**
Refer to: p1310, p1311, p1320, p1321, p1322, p1324, p1325, p1326, p1327

### p1324[0...n] U/f control programmable characteristic frequency 3 / Uf char f3

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1324</td>
<td>3</td>
<td>p0340 = 1</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [Hz]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>3000.00 [Hz]</td>
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<td></td>
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</table>

**Description:**
The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the voltage of the third point along the characteristic.

**Dependency:**
The following applies to the frequency values: p1320 <= p1322 <= p1324 <= p1326. Otherwise, a standard characteristic is used that contains the rated motor operating point.

Refer to: p1310, p1311, p1320, p1321, p1322, p1323, p1325, p1326, p1327

### p1325[0...n] U/f control programmable characteristic voltage 3 / Uf char U3

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1325</td>
<td>3</td>
<td>p0340 = 1</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [Vrms]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>10000.0 [Vrms]</td>
<td>0.0 [Vrms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the voltage of the third point along the characteristic.

**Dependency:**
Refer to: p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1325, p1326, p1327

### p1326[0...n] U/f control programmable characteristic frequency 4 / Uf char f4

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1326</td>
<td>3</td>
<td>p0340 = 1,3</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group</td>
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</tr>
<tr>
<td>Min</td>
<td>0.00 [Hz]</td>
<td>Max</td>
<td>Factory setting</td>
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<tr>
<td>Max</td>
<td>10000.00 [Hz]</td>
<td>0.00 [Hz]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the frequency of the fourth point along the characteristic.

**Dependency:**
Selects the freely programmable characteristic using p1300 = 3.

The following applies for the frequency values: p1320 <= p1322 <= p1324 <= p1326

Otherwise, a standard characteristic is used that contains the rated motor operating point.

Refer to: p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1325, p1326, p1327

**Note:**
Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327. For output frequencies above p1326, the characteristic is extrapolated with the gradient between the characteristic points p1324/p1325 and p1326/p1327.

The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.
### Parameters

#### Parameter list

**p1327[0...n]**  
**U/f control programmable characteristic voltage 4 / Uf char U4**

| Description | The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the voltage of the fourth point along the characteristic.  
**Dependency** | Selects the freely programmable characteristic using p1300 = 3.  
**Refer to:** p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1325, p1326  
**Note:** Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327. The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: p0340 = 1,3</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [Vrms]</td>
<td>Max</td>
<td>10000.0 [Vrms]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.0 [Vrms]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p1330[0...n]**  
**CI: U/f control independent voltage setpoint / Uf U_set independ.**

| Description | Sets the signal source for the voltage setpoint for U/f control with an independent voltage setpoint (p1300 = 19).  
**Dependency** | Selects the U/f control with independent voltage setpoint via p1300 = 19.  
**Refer to:** p1300 |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: U32 / FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling: p2001</td>
<td>Data set: CDS, p0170</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p1333[0...n]**  
**U/f control FCC starting frequency / U/f FCC f_start**

| Description | Sets the starting frequency at which FCC (Flux Current Control) is activated.  
**Dependency** | The correct operating mode must be set (p1300 = 1, 6).  
**Warning:** An excessively low value can result in instability.  
**Note:** For p1333 = 0 Hz, the FCC starting frequency is automatically set to 6 % of the rated motor frequency. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: p0340 = 1</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [Hz]</td>
<td>Max</td>
<td>3000.00 [Hz]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.00 [Hz]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p1334[0...n]**  
**U/f control slip compensation starting frequency / Slip comp start**

| Description | Sets the starting frequency of the slip compensation.  
**Note:** For p1334 = 0, the starting frequency of the slip compensation is automatically set to 6 % of the rated motor frequency. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: p0340 = 1</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [Hz]</td>
<td>Max</td>
<td>3000.00 [Hz]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.00 [Hz]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### p1335[0...n] Slip compensation, scaling / Slip comp scal

**Access level:** 3  
**Can be changed:** U, T  
**Units group:** -  

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 [%]</td>
<td>600.0 [%]</td>
<td>0.0 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the setpoint for slip compensation in [%] referred to r0330 (motor rated slip).

- **p1335 = 0.0 %:** Slip compensation de-activated.
- **p1335 = 100.0 %:** The slip is completely compensated.

**Dependency:** Prerequisite for a precise slip compensation for p1335 = 100 % are the precise motor parameters (p0350 ... p0360).

If the parameters are not precisely known, a precise compensation can be achieved by varying p1335.

For U/f control types with Eco optimization (4 and 7), the slip compensation must be activated in order to guarantee correct operation.

**Note:**
- The purpose of slip compensation is to maintain a constant motor speed regardless of the applied load. The fact that the motor speed decreases with increasing load is a typical characteristic of induction motors.
- For synchronous motors, this effect does not occur and the parameter has no effect in this case.
- For the open-loop control modes p1300 = 5 and 6 (textile sector), the slip compensation is internally disabled in order to be able to precisely set the output frequency.
- If p1335 is changed during commissioning (p0010 > 0), then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of p1335 have been changed by a parameter that was set when the drive was commissioned (e.g. p0000).

### p1336[0...n] Slip compensation limit value / Slip comp lim val

**Access level:** 3  
**Can be changed:** U, T  
**Units group:** -  

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [%]</td>
<td>600.00 [%]</td>
<td>250.00 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the limit value for slip compensation in [%] referred to r0330 (motor rated slip).

### r1337 CO: Actual slip compensation / Slip comp act val

**Access level:** 3  
**Can be changed:** -  
**Units group:** -  

<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 compensated slip [%] referred to r0330 (motor rated slip).

**Dependency:**
- p1335 > 0 %: Slip compensation active.
- Refer to: p1335

### p1338[0...n] U/f mode resonance damping gain / Uf Res_damp gain

**Access level:** 3  
**Can be changed:** U, T  
**Units group:** -  

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>100.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**Description:** Sets the gain for resonance damping for U/f control.

**Dependency:**
- Refer to: p1300, p1339, p1349

**Note:**
- The resonance damping function dampens active current oscillations that frequency occur under no-load conditions.
The resonance damping is active in a range from approximately 6% of the rated motor frequency (p0310). The shutoff frequency is determined by p1349.

For the open-loop control modes p1300 = 5 and 6 (textile sectors), the resonance damping is internally disabled in order that the output frequency can be precisely set.

**p1339[0...n]**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the filter time constant for resonance damping for U/f control.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency:</td>
<td>Refer to: p1300, p1338, p1349</td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>1.00 [ms]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>1000.00 [ms]</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>20.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the filter time constant for resonance damping for U/f control.

Dependency:
Refer to: p1300, p1338, p1349

**Access level:** 4
**Can be changed:** U, T
**Units group:** -
**Min** 1.00 [ms]
**Max** 1000.00 [ms]
**Factory setting** 20.00 [ms]

---

**p1340[0...n]**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the proportional gain of the I_max frequency controller.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency:</td>
<td>In the U/f modes (p1300) for textile applications and for external voltage setpoints, only the I_max voltage controller is used.</td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>0.500</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>0.000</td>
</tr>
</tbody>
</table>

**Notice:**
When de-activating the I_max controller, the following must be carefully observed:

When the maximum current (r0067) is exceeded, the output current is no longer reduced, however, overcurrent alarm messages are generated. The drive is shut down if the overcurrent limit (r0209) is exceeded.

**Note:**
The I_max limiting controller becomes ineffective if the ramp-function generator is de-activated with p1122 = 1.

p1341 = 0: I_max frequency controller de-activated and I_max voltage controller activated over the complete speed range.

**p1341[0...n]**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the integral time for the I_max frequency controller.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency:</td>
<td>Refer to: p1340</td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.000 [s]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>50.000 [s]</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>0.300 [s]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the integral time for the I_max frequency controller.

Dependency:
Refer to: p1340

**Access level:** 3
**Can be changed:** U, T
**Units group:** -
**Min** 0.000 [s]
**Max** 50.000 [s]
**Factory setting** 0.300 [s]

---

**p1342[0...n]**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the integral time for the I_max voltage controller.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency:</td>
<td>Refer to: p1340</td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.000 [s]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>50.000 [s]</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>0.300 [s]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the integral time for the I_max voltage controller.

Dependency:
Refer to: p1340

**Access level:** 3
**Can be changed:** U, T
**Units group:** -
**Min** 0.000 [s]
**Max** 50.000 [s]
**Factory setting** 0.300 [s]
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1343</td>
<td>CO: I_max controller frequency output / I_max_ctrl f_outp</td>
<td>Displays the effective frequency limit.</td>
<td>Refer to: p1340</td>
</tr>
<tr>
<td>r1344</td>
<td>I_max controller voltage output / I_max_ctrl U_outp</td>
<td>Displays the amount by which the converter output voltage is reduced.</td>
<td>Refer to: p1340</td>
</tr>
<tr>
<td>p1345[0...n]</td>
<td>I_max voltage controller proportional gain / I_max_U_ctrl Kp</td>
<td>Sets the proportional gain for the I_max voltage controller.</td>
<td>The controller settings are also used in the current controller of the DC braking (refer to p1232).</td>
</tr>
<tr>
<td>p1346[0...n]</td>
<td>I_max voltage controller integral time / I_max_U_ctrl Tn</td>
<td>Sets the integral time for the I_max voltage controller.</td>
<td>The controller settings are also used in the current controller of the DC braking (refer to p1232). For p1346 = 0, the following applies: The integral time of the I_max voltage controller is de-activated.</td>
</tr>
<tr>
<td>r1348</td>
<td>CO: U/f control Eco factor actual value / U/f Eco fac act v</td>
<td>Displays the economic factor determined for optimizing motor consumption.</td>
<td>The value is only determined for operating modes with Economic (p1300 = 4, 7).</td>
</tr>
</tbody>
</table>
### Parameters

#### p1349[0...n] U/f mode resonance damping maximum frequency / Uf res_damp f_max

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>p0340 = 1</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [Hz]</td>
<td>Max</td>
<td>3000.00 [Hz]</td>
<td>Factory setting:</td>
</tr>
</tbody>
</table>

**Description:**
Sets the maximum output frequency for resonance damping for U/f control. Resonance damping is inactive above this output frequency.

**Dependency:**
Refer to: p1338, p1339

**Note:**
For p1349 = 0, the changeover limit is automatically set to 95 % of the rated motor frequency - however, to a max. of 45 Hz.

#### p1350[0...n] Soft starting / Soft starting

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>Max</td>
<td>1</td>
<td>Factory setting:</td>
</tr>
</tbody>
</table>

**Description:**
Sets whether the voltage is continuously increased during the magnetizing phase (p1350 = 1, On) or whether it jumps directly to the voltage boost (p1350 = 0, Off).

**Value:**
0: OFF
1: ON

**Note:**
The settings for this parameter have the following advantages and disadvantages:

0 = off (jump directly to voltage boost)
- Advantage: Flux is established quickly -> torque is quickly available
- Disadvantage: The motor can move while it is being magnetized

1 = on (voltage is continually established)
- Advantage: The motor is unlikely to rotate
- Disadvantage: The flux is established slower -> torque is available later

#### p1351[0...n] CO: Motor holding brake starting frequency / Brake f_start

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>PERCENT</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-300.00 [%]</td>
<td>Max</td>
<td>300.00 [%]</td>
<td>Factory setting:</td>
</tr>
</tbody>
</table>

**Description:**
Sets the frequency setting value at the slip compensation output for starting up with motor holding brake.

**Dependency:**
When setting p1351 > 0, then slip compensation is automatically activated (p1335 = 100 %).

Refer to: p1352

**Notice:**
A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

**Note:**
Connected with p1352 a value of 100% corresponds to the motor rated slip (r0330).

#### p1352[0...n] CI: Motor holding brake starting frequency signal source / Brake f_start

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type: U32 / FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>PERCENT</td>
<td>Data set: CDS, p0170</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>1351[0]</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the frequency setting value at the slip compensation output for starting up with motor holding brake.

**Dependency:**
Refer to: p1216

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Note:  
A value of 100% corresponds to the motor rated slip (r0330). 
The setting of the starting frequency begins after magnetizing (see p0346, r0056.4) and ends once the brake opening time (p1216) has elapsed and the starting frequency (p1334) has been reached. 
A setting value of zero means that no setting procedure will take place.

### p1400[0...n] Speed control configuration / n_ctrl config

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Automatic Kp/Tn adaptation active</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
</tr>
<tr>
<td>01</td>
<td>Sensorless vector control freeze I comp</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
</tr>
<tr>
<td>05</td>
<td>Kp/Tn adaptation active</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
</tr>
<tr>
<td>06</td>
<td>Free Tn adaptation active</td>
<td>Yes</td>
<td>No</td>
<td>6050</td>
</tr>
<tr>
<td>14</td>
<td>Torque pre-control</td>
<td>Always active</td>
<td>No</td>
<td>For n_ctrl enab</td>
</tr>
<tr>
<td>15</td>
<td>Sensorless vector control, speed pre-control</td>
<td>Yes</td>
<td>No</td>
<td>6030</td>
</tr>
</tbody>
</table>

**Note:** 
When the bit is set, the I component of the speed controller is kept when changing into the open-loop controlled mode.

### p1401[0...n] Flux control configuration / Flux ctrl config

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Flux setpoint soft starting active</td>
<td>Yes</td>
<td>No</td>
<td>6722</td>
</tr>
<tr>
<td>01</td>
<td>Flux setpoint differentiation active</td>
<td>Yes</td>
<td>No</td>
<td>6723</td>
</tr>
<tr>
<td>02</td>
<td>Flux build-up control active</td>
<td>Yes</td>
<td>No</td>
<td>6722, 6723</td>
</tr>
<tr>
<td>06</td>
<td>Quick magnetizing</td>
<td>Yes</td>
<td>No</td>
<td>6722</td>
</tr>
<tr>
<td>07</td>
<td>Pre-control speed limitation</td>
<td>Yes</td>
<td>No</td>
<td>6640</td>
</tr>
</tbody>
</table>

**Note:** 
Re bit 00 (not for permanent-magnet synchronous motors): 
Initially, the flux is only established with a low rate of rise when magnetizing the induction motor. The flux setpoint p1570 is reached again at the end of the magnetizing time p0346.

Re bit 01 (not for permanent-magnet synchronous motors): 
Initially, the flux is only established with a low rate of rise when magnetizing the induction motor. The flux setpoint p1570 is reached again at the end of the magnetizing time p0346. When quick magnetizing (p1401.6 = 1) is selected, soft starting is internally de-activated and alarm A07416 is displayed.

The flux differentiation can be switched out if a significant ripple occurs in the field-generating current setpoint (r0075) when entering the field weakening range. However, this is not suitable for fast acceleration operations because then, the flux decays more slowly and the voltage limiting responds.

Re bit 02 (not for permanent-magnet synchronous motors): 
The flux build-up control operates during the magnetizing phase p0346 of the induction motor. If it is switched out, a constant current setpoint is injected and the flux is built up corresponding to the rotor time constant. When quick magnetizing (p1401.6 = 1) is selected and when flux build-up control is de-energized alarm A07416 is displayed.

Re bit 06 (not for induction motors): 
Magnetizing is performed with maximum current (0.9 * r0067). With active identification of the stator resistance (see p0621) quick magnetizing is internally de-activated and alarm A07416 is displayed. During a flying restart of a rotating motor (see p1200) no quick magnetizing takes place.
Re bit 07:

If the speed of the drive exceeds the effective speed limit of the speed limiting controller, the torque limit is reduced linearly to zero as the deviation becomes greater. This reduces the integral component of the speed controller and, in turn, the overshoot during load shedding (see also F07901 and p2162).

### p1402[0...n]
**Closed-loop current control and motor model configuration / I_ctrl config**

<table>
<thead>
<tr>
<th>Access level: 4</th>
<th>Calculated: p0340 = 1,3</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min: -</td>
<td>Max: -</td>
<td>Factory setting: 0000 bin</td>
</tr>
</tbody>
</table>

**Description:**
Sets the configuration for the closed-loop control and the motor model.

**Bit field:**
- **Bit**: 02
  - **Signal name**: Current controller adaptation active
  - **1 signal**: Yes
  - **0 signal**: No

### r1406.4...15
**CO/BO: Control word speed controller / STW n_ctrl**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min: -</td>
<td>Max: -</td>
<td>Factory setting: -</td>
</tr>
</tbody>
</table>

**Description:**
Displays the control word of the speed controller.

**Bit field:**
- **Bit**: 04
  - **Signal name**: Hold speed controller I component
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6040
- **Bit**: 05
  - **Signal name**: Set speed controller I component
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6040
- **Bit**: 11
  - **Signal name**: Droop enable
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6030

### r1407.0...17
**CO/BO: Status word speed controller / ZSW n_ctrl**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min: -</td>
<td>Max: -</td>
<td>Factory setting: -</td>
</tr>
</tbody>
</table>

**Description:**
Displays the status word of the speed controller.

**Bit field:**
- **Bit**: 00
  - **Signal name**: U/f control active
  - **1 signal**: Yes
  - **0 signal**: No
- **Bit**: 01
  - **Signal name**: Encoderless operation active
  - **1 signal**: Yes
  - **0 signal**: No
- **Bit**: 02
  - **Signal name**: Torque control active
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6030, 6060, 8010, 8010
- **Bit**: 03
  - **Signal name**: Speed control active
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6040
- **Bit**: 05
  - **Signal name**: Speed controller I component frozen
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6040
- **Bit**: 06
  - **Signal name**: Speed controller I component set
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6040
- **Bit**: 07
  - **Signal name**: Torque limit reached
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6060
- **Bit**: 08
  - **Signal name**: Upper torque limit active
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6060
- **Bit**: 09
  - **Signal name**: Lower torque limit active
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6060
- **Bit**: 10
  - **Signal name**: Droop enabled
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6030
- **Bit**: 11
  - **Signal name**: Speed setpoint limited
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6030
- **Bit**: 12
  - **Signal name**: Ramp-function generator set
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: -
- **Bit**: 13
  - **Signal name**: Encoderless operation due to a fault
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: -
- **Bit**: 14
  - **Signal name**: I/f control active
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: -
- **Bit**: 15
  - **Signal name**: Torque limit reached (without pre-control)
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6060
- **Bit**: 17
  - **Signal name**: Speed limiting control active
  - **1 signal**: Yes
  - **0 signal**: No
  - **FP**: 6640
Parameters

Parameter list

r1408.0...14  
**CO/BO: Status word current controller / ZSW I_ctrl**

Access level: 4  
Can be changed: -  
Units group: -  

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>0</td>
<td>Current ctrl act</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>1</td>
<td>Id control, I component limiting</td>
<td>Active</td>
<td>Not active</td>
<td>6714</td>
</tr>
<tr>
<td>03</td>
<td>3</td>
<td>Voltage limiting</td>
<td>Active</td>
<td>Not active</td>
<td>6714</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>Speed adaptation, limiting</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>Motor stalled</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>13</td>
<td>Separately excited synchronous motor is excited</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>14</td>
<td>Current model FEM: magnetizing excitation current limited to 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Displays the current controller status word.

p1416[0...n]  
**Speed setpoint filter 1 time constant / n_set_filt 1 T**

Access level: 4  
Can be changed: U, T  
Units group: -  

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>0.00 [ms]</td>
<td>5000.00 [ms]</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the time constant for the speed setpoint filter 1 (PT1).

r1438  
**CO: Speed controller, speed setpoint / n_ctrl n_set**

Access level: 3  
Can be changed: -  
Units group: 3_1  

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>- [rpm]</td>
<td>- [rpm]</td>
<td>- [rpm]</td>
<td>- [rpm]</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Displays the speed setpoint after setpoint limiting for the P component of the speed controller.

Dependency: Refer to: r1439

Note: In the standard state (the reference model is de-activated), r1438 = r1439.

r1439  
**Speed setpoint, I component / n_set I_comp**

Access level: 4  
Can be changed: -  
Units group: 3_1  

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>- [rpm]</td>
<td>- [rpm]</td>
<td>- [rpm]</td>
<td>- [rpm]</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Displays the speed setpoint for the I component of the speed controller (output of the reference model after the setpoint limiting).

Dependency: Refer to: r1438

Note: In the standard state (the reference model is de-activated), r1438 = r1439.
### Description:
Displays the sum of all speed setpoints that are present.
The following sources are available for the displayed setpoint:
- speed setpoint 1 (p1155).
- speed setpoint 2 (p1160).
- speed setpoint for the speed pre-control (p1430).
- setpoint from DSC (for DSC active).
- setpoint via PC (for master control active).

**Dependency:**
Refer to: r1119, p1155, p1160

### r1445 CO: Actual speed smoothed / n_act smooth

**Access level:** 4  
**Calculated:** -  
**Data type:** FloatingPoint32

**Can be changed:** -  
**Scaling:** p2000  
**Data set:** -

**Units group:** 3_1  
**Unit selection:** p0505

**Min**  
[- [rpm]]

**Max**  
[- [rpm]]

**Factory setting**  
[- [rpm]]

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

### p1452[0...n] Speed controller speed actual value smoothing time (SLVC) / n_C n_act T_s SLVC

**Access level:** 2  
**Calculated:** -  
**Data type:** FloatingPoint32

**Can be changed:** U, T  
**Scaling:** -  
**Data set:** DDS, p0180

**Units group:** -  
**Unit selection:** -

**Min**  
0.00 [ms]

**Max**  
32000.00 [ms]

**Factory setting**  
10.00 [ms]

**Description:**
Sets the smoothing time for the actual speed of the speed controller for encoderless closed-loop speed control.

**Note:**
The smoothing must be increased if there is gear backlash. For longer smoothing times, the integral time of the speed controller must also be increased (e.g. using p0340 = 4).

### r1454 CO: Speed controller system deviation I component / n_ctrl sys dev Tn

**Access level:** 4  
**Calculated:** -  
**Data type:** FloatingPoint32

**Can be changed:** -  
**Scaling:** p2000  
**Data set:** -

**Units group:** 3_1  
**Unit selection:** p0505

**Min**  
[- [rpm]]

**Max**  
[- [rpm]]

**Factory setting**  
[- [rpm]]

**Description:**
Displays the system deviation of the I component of the speed controller.

### p1455[0...n] CI: Speed controller P gain adaptation signal / n_ctr adapt_sig Kp

**Access level:** 4  
**Calculated:** -  
**Data type:** U32 / FloatingPoint32

**Can be changed:** T  
**Scaling:** PERCENT  
**Data set:** CDS, p0170

**Units group:** -  
**Unit selection:** -

**Min**  
-  

**Max**  
-  

**Factory setting**  
0

**Description:**
Sets the source for the adaptation signal to additionally adapt the P gain of the speed controller.

**Dependency:**
Refer to: p1456, p1457, p1458, p1459
Description: Sets the lower starting point of the adaptation range for the additional adaptation of the P gain of the speed controller. The values are in % and refer to the set source of the adaptation signal.

Dependency: Refer to: p1455, p1457, p1458, p1459

Note: If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

Description: Sets the upper starting point of the adaptation range for the additional adaptation of the P gain of the speed controller. The values are in % and refer to the set source of the adaptation signal.

Dependency: Refer to: p1455, p1456, p1458, p1459

Note: If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

Description: Sets the adaptation factor before the adaptation range (0 % ... p1456) to additionally adapt the P gain of the speed/velocity controller.

Dependency: Refer to: p1455, p1456, p1457, p1459

Note: If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

Description: Sets the adaptation factor after the adaptation range (> p1457) to additionally adapt the P gain of the speed/velocity controller.

Dependency: Refer to: p1455, p1456, p1457, p1458

Note: If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.
### Parameter List

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1461[0...n]</strong></td>
<td>Speed controller Kp adaptation speed, upper scaling / n_ctr Kp n up scal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td></td>
<td>Calculated: p0340 = 1,3,4</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td></td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group: -</td>
<td></td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min: 0.0 [%]</td>
<td>Max: 200000.0 [%]</td>
<td>Factory setting: 100.0 [%]</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the P gain of the speed controller for the upper adaptation speed range (&gt; p1465). The entry is made referred to the P gain for the lower adaptation speed range of the speed controller (% referred to p1470).</td>
<td>Refer to: p1464, p1465</td>
<td>If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller gain below p1465 is adapted with p1461. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.</td>
</tr>
<tr>
<td><strong>p1463[0...n]</strong></td>
<td>Speed controller Tn adaptation speed, upper scaling / n_ctr Tn n up scal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td></td>
<td>Calculated: p0340 = 1,3,4</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td></td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group: -</td>
<td></td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min: 0.0 [%]</td>
<td>Max: 200000.0 [%]</td>
<td>Factory setting: 100.0 [%]</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the integral time of the speed controller after the adaptation speed range (&gt; p1465). The entry is made referred to the integral time for the lower adaptation speed range of the speed controller (% referred to p1472).</td>
<td>Refer to: p1464, p1465</td>
<td>If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller integral time below p1465 is adapted with p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.</td>
</tr>
<tr>
<td><strong>p1464[0...n]</strong></td>
<td>Speed controller adaptation speed, lower / n_ctrl n lower</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td></td>
<td>Calculated: p0340 = 1,3,4</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td></td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group: 3_1</td>
<td></td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
<tr>
<td>Min: 0.00 [rpm]</td>
<td>Max: 210000.00 [rpm]</td>
<td>Factory setting: 0.00 [rpm]</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the lower adaptation speed of the speed controller. No adaptation is effective below this speed.</td>
<td>Refer to: p1461, p1463, p1465</td>
<td>If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller below p1465 is adapted with p1461 or p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.</td>
</tr>
<tr>
<td><strong>p1465[0...n]</strong></td>
<td>Speed controller adaptation speed, upper / n_ctrl n upper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td></td>
<td>Calculated: p0340 = 1,3,4</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td></td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group: 3_1</td>
<td></td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
<tr>
<td>Min: 0.00 [rpm]</td>
<td>Max: 210000.00 [rpm]</td>
<td>Factory setting: 210000.00 [rpm]</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the upper adaptation speed of the speed controller. No adaptation is effective above this speed. For P gain, p1470 x p1461 is effective. For the integral time, p1472 x p1463 is effective.</td>
<td>Refer to: p1461, p1463, p1464</td>
<td></td>
</tr>
</tbody>
</table>
Note: If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller below p1465 is adapted with p1461 or p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1466[0...n]</td>
<td>CI: Speed controller P-gain scaling / n_ctrl Kp scal</td>
</tr>
<tr>
<td>Access level: 4</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: T</td>
<td>Scaling: PERCENT</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: U32 / FloatingPoint32</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Description: Sets the signal source for the scaling of the P gain of the speed controller. This also makes the effective P gain (including adaptations) scalable.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1468</td>
<td>CO: Speed controller P-gain effective / n_ctr Kp eff</td>
</tr>
<tr>
<td>Access level: 4</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Description: Displays the effective P gain of the speed controller.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1469</td>
<td>Speed controller integral time effective / n_ctr Tn eff</td>
</tr>
<tr>
<td>Access level: 4</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Description: Displays the effective integral time of the speed controller.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1470[0...n]</td>
<td>Speed controller encoderless operation P-gain / n_ctrl SLVC Kp</td>
</tr>
<tr>
<td>Access level: 2</td>
<td>Calculated: p0340 = 1,3,4</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Description: Sets the P gain for encoderless operation for the speed controller. The product p0341 x p0342 is taken into account when automatically calculating the speed controller (p0340 = 1, 3, 4).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1472[0...n]</td>
<td>Speed controller encoderless operation integral time / n_ctrl SLVC Tn</td>
</tr>
<tr>
<td>Access level: 2</td>
<td>Calculated: p0340 = 1,3,4</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Description: Set the integral time for encoderless operation for the speed controller. The integral component is stopped if the complete controller output or the sum of controller output and torque pre-control reach the torque limit.</td>
<td></td>
</tr>
</tbody>
</table>
### Parameter list

#### Parameter List

**p1475[0...n]**  
**CI: Speed controller torque setting value for motor holding brake / n_ctrl M_sv MHB**

**Access level:** 3  
**Calculated:** -  
**Data type:** U32 / FloatingPoint32  
**Can be changed:** T  
**Scaling:** p2003  
**Units group:** -  
**Unit selection:** -  
**Min**  
**Max**  
**Factory setting**  

**Description:** Sets the signal source for the torque setting value when starting up with motor holding brake.

**Dependency:** The switching in of the torque setting value for the motor holding brake has a higher priority than the setting of the integrator value using p1477 and p1478.

**Note:** The setting of the integral output of the speed controller begins after magnetizing (see p0346, r0056 bit 4) and ends at the end of the brake control opening time p1216. A setting value of zero means that no setting procedure will take place.

If p1351 is used as a signal source for the torque setting value, the percentage value is interpreted in relation to the rated torque (p2003).

**p1476[0...n]**  
**BI: Speed controller hold integrator / n_CTRL integ stop**

**Access level:** 4  
**Calculated:** -  
**Data type:** U32 / Binary  
**Can be changed:** T  
**Scaling:** -  
**Units group:** -  
**Unit selection:** -  
**Min**  
**Max**  
**Factory setting**  

**Description:** Sets the signal source to hold the integrator for the speed controller.

**p1477[0...n]**  
**BI: Speed controller set integrator value / n_CTRL integ_setVal**

**Access level:** 3  
**Calculated:** -  
**Data type:** U32 / Binary  
**Can be changed:** T  
**Scaling:** -  
**Units group:** -  
**Unit selection:** -  
**Min**  
**Max**  
**Factory setting**  

**Description:** Sets the signal source to set the integrator setting value (p1478).

**Dependency:** Refer to: p1478, p1479

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

**p1478[0...n]**  
**CI: Speed controller integrator setting value / n_ctr integ_setVal**

**Access level:** 3  
**Calculated:** -  
**Data type:** U32 / FloatingPoint32  
**Can be changed:** T  
**Scaling:** p2003  
**Units group:** -  
**Unit selection:** -  
**Min**  
**Max**  
**Factory setting**  

**Description:** Sets the signal source for the integrator setting value for the velocity controller.

**Dependency:** The setting value of the speed controller integrator is weighted with the scaling factor of the signal source in p1479.

If p1478 is interconnected to the integral output of the speed controller (r1482), then after the magnetizing time (r0346) and if the speed controller is enabled, the integral component of the controller is set to the last value before the pulse inhibit. This value is set if no setting command (p1477) is interconnected or, at the instant that the pulses were inhibited, a setting command is available, which is not de-activated up to the next time that the pulses are inhibited. For sensorless vector control, in addition p1400.1 should be set to 1 so that when the drive is stopped, the integral component of the speed controller is not controlled down to zero.

In order that when setting the integrator output, only the static torque is detected, we recommend that the accelerating torque is completely pre-controlled (e.g. p1496).

If p1478 is interconnected to another output other than r1482, then after magnetizing and speed controller enable, the integral output is set once if the setting command is not interconnected (p1477 = 0).
### Parameters

#### Parameter list

Refer to: p1477, p1479

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

<table>
<thead>
<tr>
<th><strong>p1479[0...n]</strong></th>
<th><strong>CI: Speed controller integrator setting value scaling / n_ctrl I_val scal</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>4</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source for scaling the integrator setting value (p1478) of the speed controller.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p1477, p1479</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p1486[0...n]</strong></th>
<th><strong>CI: Droop compensation torque / Droop M_comp</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-2000.0 [%]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>2000.0 [%]</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>100.0 [%]</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source for the compensation torque to be output within the droop calculation. p1486 should be connected with the torque setpoint (corresponding to the selection p1488) of the drive, with which load equalization should take place.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p1487[0...n]</strong></th>
<th><strong>Droop compensation torque scaling / Droop M_comp scal</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-2000.0 [%%]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>2000.0 [%%]</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>100.0 [%%]</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the scaling for the compensation torque within the droop calculation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p1488[0...n]</strong></th>
<th><strong>Droop input source / Droop input source</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the source for droop feedback. With increasing torque, the speed setpoint is reduced (enabled using p1492), so that for mechanically coupled drives a load equalization (load compensation) is obtained. A load difference compensation is also possible, if p1486 is connected with the torque setpoint of the other drive.</td>
</tr>
</tbody>
</table>

**Value:**

0: Droop feedback not connected
1: Droop from torque setpoint
2: Droop from speed controller output
3: Droop from integral output, speed controller
### Parameter List

**Dependency:** Refer to: p1486, p1487, p1489, r1490, p1492

**Caution:** For active acceleration precontrol of the speed controller (refer to p1496), it is not recommended that p1488 is set to 1, as this could result in positive coupling effects. Instead of this, as source of the droop feedback, the output signal of the speed controller should be used, which generally sets the load torque.

### p1489[0...n] Droop feedback scaling / Droop scaling

<table>
<thead>
<tr>
<th>Access level</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>U, T</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Sets the scaling for the droop feedback

**Dependency:** Refer to: p1486, p1487, p1488, r1490, p1492

**Note:** Example: A value of 0.05 means that for a torque equal to the rated motor torque, the rated motor speed is reduced by 5 %.

#### Values

<table>
<thead>
<tr>
<th>Min</th>
<th>0.000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max</td>
<td>0.500</td>
</tr>
</tbody>
</table>

### r1490 CO: Droop feedback speed reduction / Droop n_reduction

<table>
<thead>
<tr>
<th>Access level</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Units group: 3_1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the output signal of the droop calculation. The droop feedback result is subtracted from the speed setpoint when activated (p1492).

**Dependency:** Refer to: p1486, p1487, p1488, r1490, p1492

### p1492[0...n] BI: Droop feedback enable / Droop enable

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

**Description:** Enables the droop to be applied to the speed/velocity setpoint.

**Dependency:** Refer to: p1486, p1487, p1488, p1489, r1490

**Note:** Even when not enabled, the droop speed is calculated but not subtracted from the setpoint speed. This makes it possible to subtract the result of this calculation from the speed of another drive.

### r1493 CO: Moment of inertia, total / M_inertia total

<table>
<thead>
<tr>
<th>Access level</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Units group: 25_1</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the parameterized total moment of inertia ((p0341 * p0342) * p1496).
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Warning</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1496[0...n]</td>
<td>Acceleration pre-control scaling / a_prectrl scal</td>
<td>Sets the scaling for the acceleration pre-control of the speed/velocity controller.</td>
<td>The acceleration precontrol r1518 is kept at the old value if the ramp-function generator tracking (r1199.5) is active or the ramp-function generator output is set (r1199.3). This is used to avoid torque peaks. Depending on the application, it may therefore be necessary to disable the ramp-function generator tracking (p1145 = 0) or the acceleration precontrol (p1496 = 0).</td>
<td>The parameter is set to 100% by the rotating measurement (refer to p1960). The acceleration pre-control may not be used if the speed setpoint manifests significant ripple (e.g. analog setpoint) and the rounding-off in the speed ramp-function generator is disabled. We also recommend that the pre-control mode is not used if there is gearbox backlash.</td>
</tr>
<tr>
<td>p1499[0...n]</td>
<td>Accelerating for torque control, scaling / a for M_ctrl scal</td>
<td>Sets the scaling for the acceleration integrator at low speeds (only for encoderless torque control).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p1500[0...n]</td>
<td>Torque setpoint selection / M_set sel</td>
<td>Sets the source for the torque setpoint.</td>
<td>For single-digit values, the following applies: The value specifies the main setpoint. For double-digit values, the following applies: The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.</td>
<td>Value: 0: No main setpoint 2: Analog setpoint 6: Fieldbus 20: Analog setpoint + no main setpoint 22: Analog setpoint + analog setpoint 26: Analog setpoint + fieldbus 60: Fieldbus + no main setpoint 62: Fieldbus + analog setpoint 66: Fieldbus+fieldbus</td>
</tr>
</tbody>
</table>
Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

**p1500[0...n]** Torque setpoint selection / M_set sel

<table>
<thead>
<tr>
<th>CU240B-2_DP</th>
<th>CU240E-2_DP</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>2</td>
<td>Calculated:</td>
<td>-</td>
<td>Data type: Integer16</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>C(1), T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: CDS, p0170</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0</td>
<td><strong>Max</strong></td>
<td>66</td>
<td><strong>Factory setting</strong></td>
</tr>
</tbody>
</table>

**Description:** Sets the source for the torque setpoint.

For single-digit values, the following applies:
The value specifies the main setpoint.

For double-digit values, the following applies:
The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.

**Example:**
Value = 26
--> The analog setpoint (2) supplies the supplementary setpoint.
--> The fieldbus (6) supplies the main setpoint.

**Value:**
0: No main setpoint
2: Analog setpoint
6: Fieldbus
20: Analog setpoint + no main setpoint
22: Analog setpoint + analog setpoint
26: Analog setpoint + fieldbus
60: Fieldbus + no main setpoint
62: Fieldbus + analog setpoint
66: Fieldbus + fieldbus

**Dependency:**
When changing this parameter, the following settings are influenced:
Refer to: p1503, p1511

**Caution:** When changing this parameter, the corresponding programmed settings are made and become active.

**p1500[0...n]** Torque setpoint selection / M_set sel

<table>
<thead>
<tr>
<th>CU240E-2_DP</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong></td>
<td>2</td>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>C(1), T</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0</td>
<td><strong>Max</strong></td>
<td>77</td>
</tr>
</tbody>
</table>

**Description:** Sets the source for the torque setpoint.

For single-digit values, the following applies:
The value specifies the main setpoint.

For double-digit values, the following applies:
The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.

**Example:**
Value = 26
--> The analog setpoint (2) supplies the supplementary setpoint.
--> The fieldbus (6) supplies the main setpoint.

**Value:**
0: No main setpoint
2: Analog setpoint
6: Fieldbus
7: Analog setpoint 2
20: Analog setpoint + no main setpoint
22: Analog setpoint + analog setpoint
26: Analog setpoint + fieldbus
27: Analog setpoint + analog setpoint 2
60: Fieldbus + no main setpoint
62: Fieldbus + analog setpoint
66: Fieldbus + fieldbus
67: Fieldbus + analog setpoint 2
Parameters

Parameter list

62: Fieldbus + analog setpoint
66: Fieldbus + fieldbus
67: Fieldbus + analog setpoint 2
70: Analog setpoint 2 + no main setpoint
72: Analog setpoint 2 + analog setpoint
76: Analog setpoint 2 + fieldbus
77: Analog setpoint 2 + analog setpoint 2

Dependency: When changing this parameter, the following settings are influenced:
Refer to: p1503, p1511
Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

<table>
<thead>
<tr>
<th>p1500[0...n]</th>
<th>Torque setpoint selection / M_set sel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level: 2</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU240E-2</td>
<td>Can be changed: C(1), T</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>Units group: -</td>
</tr>
</tbody>
</table>

Min | Max | Factory setting |
--- | --- | --- |
0 | 77 | 2 |

Description: Sets the source for the torque setpoint.
For single-digit values, the following applies:
The value specifies the main setpoint.
For double-digit values, the following applies:
The left-hand digit specifies the supplementary setpoint, the right-hand digit the main setpoint.
Example:
Value = 26
--> The analog setpoint (2) supplies the supplementary setpoint.
--> The fieldbus (6) supplies the main setpoint.

Value:
0: No main setpoint
2: Analog setpoint
6: Fieldbus
7: Analog setpoint 2
20: Analog setpoint + no main setpoint
22: Analog setpoint + analog setpoint
26: Analog setpoint + fieldbus
27: Analog setpoint + analog setpoint 2
60: Fieldbus + no main setpoint
62: Fieldbus + analog setpoint
66: Fieldbus + fieldbus
67: Fieldbus + analog setpoint 2
70: Analog setpoint 2 + no main setpoint
72: Analog setpoint 2 + analog setpoint
76: Analog setpoint 2 + fieldbus
77: Analog setpoint 2 + analog setpoint 2

Dependency: When changing this parameter, the following settings are influenced:
Refer to: p1503, p1511
Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

<table>
<thead>
<tr>
<th>p1501[0...n]</th>
<th>BI: Change over between closed-loop speed/torque control / Changeov n/M_ctrl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
</tbody>
</table>

Min | Max | Factory setting |
--- | --- | --- |
- | - | 0 |

Description: Sets the signal source for toggling between speed and torque control.
Dependency: The input connectors to enter the torque are provided using p1511, p1512 and p1513.
Refer to: p1300
**Caution:**
If the closed-loop torque control is not activated (p1300) and a change is made to closed-loop torque control (p1501), OFF1 (p0840) does not have its own braking response but pulse suppression when standstill is detected (p1226, p1227).

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

**Note:**
0 signal: Closed-loop speed control
1 signal: Closed-loop torque control

### p1503[0...n]
**CI: Torque setpoint / M_set**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -
- **Max:** -
- **Description:** Sets the signal source for the torque setpoint for torque control.
- **Note:** A change is made to closed-loop torque control if, in p1300, closed-loop torque control was selected or if the selection was made using the changeover source in p1501. It is also possible to change over in operation using p1501.

### r1508
**CO: Torque setpoint before supplementary torque / M_set bef. M_suppl**

- **Access level:** 2
- **Can be changed:** -
- **Units group:** 7_1
- **Min:** - [Nm]
- **Max:** - [Nm]
- **Description:** Displays the torque setpoint before entering the supplementary torque.

### p1511[0...n]
**CI: Supplementary torque 1 / M_suppl 1**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -
- **Max:** -
- **Description:** Sets the signal source for supplementary torque 1.

### p1512[0...n]
**CI: Supplementary torque 1 scaling / M_suppl 1 scal**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -
- **Max:** -
- **Description:** Sets the signal source for scaling the supplementary torque 1.

### p1513[0...n]
**CI: Supplementary torque 2 / M_suppl 2**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -
- **Max:** -
- **Description:** Sets the signal source for supplementary torque 2.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1514[0...n]</td>
<td>Supplementary torque 2 scaling / M_suppl 2 scal</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>r1515</td>
<td>Supplementary torque total / M_suppl total</td>
<td>2</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
</tr>
<tr>
<td>r1516</td>
<td>CO: Supplementary torque and acceleration torque / M_suppl + M_accel</td>
<td>2</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
</tr>
<tr>
<td>p1517[0...n]</td>
<td>Accelerating torque smoothing time constant / M_accel T_smooth</td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>r1518[0...1]</td>
<td>CO: Accelerating torque / M_accel</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the scaling for supplementary torque 2.
- Displays the total supplementary torque. The displayed value is the total of supplementary torque values 1 and 2 (p1511, p1512, p1513, p1514).
- Displays the total supplementary torque and the accelerating torque. The displayed value is the total of the smoothed supplementary torque and the accelerating torque (p1516 = p1518[1] + r1515).
- Sets the smoothing time constant of the accelerating torque. The acceleration pre-control is inhibited if the smoothing is set to the maximum value.
- Displays the accelerating torque for pre-control of the speed controller.

**Dependency:**
- Refer to: p0341, p0342, p1496
### p1520[0...n] CO: Torque limit upper / M_max upper

- **Access level:** 2
- **Calculated:** p0340 = 1,3,5
- **Data type:** FloatingPoint32
- **Can be changed:** U, T
- **Scaling:** p2003
- **Units group:** 7_1
- **Data set:** DDS, p0180
- **Unit selection:** p0505
- **Min:** -1000000.00 [Nm]
- **Max:** 20000000.00 [Nm]
- **Factory setting:** 0.00 [Nm]

**Description:** Sets the fixed, upper torque limit.

**Dependency:** Refer to: p1521, p1522, p1523, r1538, r1539

**Danger:** Negative values when setting the upper torque limit (p1520 < 0) can result in the motor accelerating in an uncontrolled fashion.

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

**Note:** The torque limit is limited to 400% of the rated motor torque. When automatically calculating the motor/closed-loop control parameters (p0340), the torque limit is set to match the current limit (p0640).

### p1521[0...n] CO: Torque limit lower / M_max lower

- **Access level:** 2
- **Calculated:** p0340 = 1,3,5
- **Data type:** FloatingPoint32
- **Can be changed:** U, T
- **Scaling:** p2003
- **Units group:** 7_1
- **Data set:** DDS, p0180
- **Unit selection:** p0505
- **Min:** -20000000.00 [Nm]
- **Max:** 1000000.00 [Nm]
- **Factory setting:** 0.00 [Nm]

**Description:** Sets the fixed, lower torque limit.

**Dependency:** Refer to: p1520, p1522, p1523

**Danger:** Positive values when setting the lower torque limit (p1521 > 0) can result in the motor accelerating in an uncontrolled fashion.

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

**Note:** The torque limit is limited to 400% of the rated motor torque. When automatically calculating the motor/closed-loop control parameters (p0340), the torque limit is set to match the current limit (p0640).

### p1522[0...n] CI: Torque limit upper / M_max upper

- **Access level:** 3
- **Calculated:** -
- **Data type:** U32 / FloatingPoint32
- **Can be changed:** T
- **Scaling:** p2003
- **Units group:** -
- **Data set:** CDS, p0170
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** 1520[0]

**Description:** Sets the signal source for the upper torque limit.

**Dependency:** Refer to: p1520, p1521, p1523

**Danger:** Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

### p1523[0...n] CI: Torque limit lower / M_max lower

- **Access level:** 3
- **Calculated:** -
- **Data type:** U32 / FloatingPoint32
- **Can be changed:** T
- **Scaling:** p2003
- **Units group:** -
- **Data set:** CDS, p0170
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** 1521[0]

**Description:** Sets the signal source for the lower torque limit.

**Dependency:** Refer to: p1520, p1521, p1522
### Parameters

**Parameter list**

**Danger:**
Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1524[0...n]</strong></td>
<td>CO: Torque limit upper/motoring scaling / M_max up/mot scal</td>
<td>p1400.4 = 0: upper/lower, p1400.4 = 1: motoring / regenerating</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
<td>This parameter can be freely interconnected. The value has the meaning stated above if it is interconnected from connector input p1528.</td>
</tr>
<tr>
<td><strong>p1525[0...n]</strong></td>
<td>CO: Torque limit lower scaling / M_max lower scal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r1526</strong></td>
<td>CO: Torque limit upper without offset / M_max up w/o offs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r1527</strong></td>
<td>CO: Torque limit lower without offset / M_max low w/o offs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
p1528[0...n] CI: Torque limit upper scaling / M_max upper scal

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>PERCENT</td>
</tr>
<tr>
<td>Data type:</td>
<td>U32 / FloatingPoint32</td>
</tr>
<tr>
<td>Data set:</td>
<td>CDS, p0170</td>
</tr>
</tbody>
</table>

Description: Sets the signal source for the scaling of the upper torque limit in p1522.

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

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

p1529[0...n] CI: Torque limit lower scaling / M_max lower scal

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>PERCENT</td>
</tr>
<tr>
<td>Data type:</td>
<td>U32 / FloatingPoint32</td>
</tr>
<tr>
<td>Data set:</td>
<td>CDS, p0170</td>
</tr>
</tbody>
</table>

Description: Sets the signal source for the scaling of the lower torque limit in p1523.

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

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

p1530[0...n] Power limit motoring / P_max mot

<table>
<thead>
<tr>
<th>Access level:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
</tr>
<tr>
<td>Units group:</td>
<td>14_5</td>
</tr>
<tr>
<td>Calculated:</td>
<td>p0340 = 1,3,5</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Data set:</td>
<td>DDS, p0180</td>
</tr>
</tbody>
</table>

Min 0.00 [kW]  Max 100000.00 [kW]  Factory setting 0.00 [kW]

Description: Sets the power limit when motoring.

Dependency: Refer to: p0500, p1531

Note: The power limit is limited to 300% of the rated motor power.

p1531[0...n] Power limit regenerative / P_max gen

<table>
<thead>
<tr>
<th>Access level:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
</tr>
<tr>
<td>Units group:</td>
<td>14_5</td>
</tr>
<tr>
<td>Calculated:</td>
<td>p0340 = 1,3,5</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Data set:</td>
<td>DDS, p0180</td>
</tr>
</tbody>
</table>

Min -100000.00 [kW]  Max -0.01 [kW]  Factory setting -0.01 [kW]

Description: Sets the regenerative power limit.

Dependency: Refer to: r0206, p0500, p1530

Note: The power limit is limited to 300% of the rated motor power.

For power units without energy recovery capability, the regenerative power limit is preset to 30 % of the power r0206[0]. For a braking resistor connected to the DC link (p0219 > 0), the power limit when generating is automatically adapted.

For power units with energy recovery, the parameter is limited to the negative value of r0206[2].
## Parameters

### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1533</td>
<td>Current limit torqu generating total / $I_{q_max}$ total</td>
<td></td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>6_2</td>
<td>p0505</td>
<td>-</td>
</tr>
<tr>
<td>r1536[0...1]</td>
<td>Current limit maximum torque-generating current / $I_{sq_max}$</td>
<td></td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>6_2</td>
<td>p0505</td>
<td>-</td>
</tr>
<tr>
<td>r1537[0...1]</td>
<td>Current limit minimum torque-generating current / $I_{sq_min}$</td>
<td></td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>6_2</td>
<td>p0505</td>
<td>-</td>
</tr>
<tr>
<td>r1538</td>
<td>CO: Upper effective torque limit / $M_{max_upper_eff}$</td>
<td></td>
<td>2</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>7_1</td>
<td>p0505</td>
<td>-</td>
</tr>
<tr>
<td>r1539</td>
<td>CO: Lower effective torque limit / $M_{max_lower_eff}$</td>
<td></td>
<td>2</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>7_1</td>
<td>p0505</td>
<td>-</td>
</tr>
</tbody>
</table>

Description:
Displays the maximum torque/force generating current as a result if all current limits.

Index:

<table>
<thead>
<tr>
<th>[0]</th>
<th>[1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited</td>
<td>Unlimited</td>
</tr>
</tbody>
</table>

Description:
Displays the maximum limit for the torque-generating current component. Index 0 indicates the signal limited by the Vdc controller.

Index:

<table>
<thead>
<tr>
<th>[0]</th>
<th>[1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited</td>
<td>Unlimited</td>
</tr>
</tbody>
</table>

Description:
Displays the minimum limit for the torque-generating current component. Index 0 indicates the signal limited by the Vdc controller.

Index:

<table>
<thead>
<tr>
<th>[0]</th>
<th>[1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited</td>
<td>Unlimited</td>
</tr>
</tbody>
</table>

Description:
Displays the currently effective upper torque limit.

Note:
The effective upper torque limit is reduced with respect to the selected upper torque limit p1520, if the current limit p0640 is reduced or the rated magnetizing current of the induction motor p0320 is increased. This may be the case for rotating measurements (see p1960). The torque limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

Description:
Displays the currently effective lower torque limit.

Note:
The effective lower torque limit is reduced with respect to the selected lower torque limit p1521, if the current limit p0640 is reduced or the rated magnetizing current of the induction motor p0320 is increased.
This may be the case for rotating measurements (see p1960).
The torque limit \( p1520 \) can be re-calculated using \( p0340 = 1, 3 \) or 5.

### \( r1547[0...1] \) CO: Torque limit for speed controller output / \( M_{\text{max} \text{outp n_ctrl}} \)
- **Access level:** 3
- **Can be changed:** -
- **Units group:** 7_1
- **Min:** - [Nm]  
  **Max:** - [Nm]
- **Factory setting:**

#### Description:
Displays the torque limit to limit the speed controller output.

#### Index:
- \([0]\) = Upper limit
- \([1]\) = Lower limit

### \( r1548[0...1] \) CO: Stall current limit torque-generating maximum / \( I_{sq_{\text{max} \text{stall}}} \)
- **Access level:** 4
- **Can be changed:** -
- **Units group:** 6_2
- **Min:** - [Arms]  
  **Max:** - [Arms]
- **Factory setting:**

#### Description:
Displays the limit for the torque-generating current component using the stall calculation, the current limit of the power unit as well as the parameterization in \( p0640 \).

#### Index:
- \([0]\) = Upper limit
- \([1]\) = Lower limit

### \( p1552[0...n] \) CI: Torque limit upper scaling without offset / \( M_{\text{max} \text{up w/o offs}} \)
- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -  
  **Max:** -
- **Factory setting:**

#### Description:
Sets the signal source for the scaling of the upper torque limiting to limit the speed controller output without taking into account the current and power limits.

### \( p1554[0...n] \) CI: Torque limit lower scaling without offset / \( M_{\text{max} \text{low w/o offs}} \)
- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -  
  **Max:** -
- **Factory setting:**

#### Description:
Sets the signal source for the scaling of the lower torque limiting to limit the speed controller output without taking into account the current and power limits.

### \( p1570[0...n] \) CO: Flux setpoint / Flux setpoint
- **Access level:** 3
- **Can be changed:** U, T
- **Units group:** -
- **Min:** 50.0 [\%]  
  **Max:** 200.0 [\%]
- **Factory setting:**

#### Description:
Sets the flux setpoint referred to rated motor flux.

#### Notice:
A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

#### Note:
For \( p1570 > 100\% \), the flux setpoint increases as a function of the load from 100\% (no-load operation) to the setting in \( p1570 \) (above rated motor torque), if \( p1580 > 0\% \) has been set.
**Parameters**

**Parameter list**

### p1573[0...n] Flux threshold value magnetizing / Flux thresh magnet

**Access level:** 3  
**Can be changed:** U, T  
**Units group:** -  
**Data type:** FloatingPoint32  
**Data set:** DDS, p0180

- **Min:** 10.0 [%]  
- **Max:** 200.0 [%]  
- **Factory setting:** 100.0 [%]

**Description:** Sets the flux threshold value for enabling the speed setpoint and the end of magnetizing (r0056.4).

**Note:** The parameter only has an influence if the flux actual value reaches the threshold value p1573 more quickly during magnetizing than the time set in p0346.
The parameter has no influence for flying restart (see p1200) and after DC braking (see p1231).

### p1574[0...n] Voltage reserve dynamic / U_reserve dyn

- **PM230**
  - **Access level:** 3  
  - **Can be changed:** U, T  
  - **Units group:** 5_1  
  - **Dependency:** Refer to: p0500  
  - **Calculated:** p0340 = 1,3,5  
  - **Data type:** FloatingPoint32  
  - **Data set:** DDS, p0180

- **PM240**  
- **PM250, PM260**

- **Min:** 0.0 [Vrms]  
- **Max:** 150.0 [Vrms]  
- **Factory setting:** 2.0 [Vrms]

**Description:** Sets a dynamic voltage reserve.

**Dependency:** Refer to: p0500  
**Note:** In the field weakening range, it must be expected that the control dynamic performance is somewhat restricted due to the limited possibilities of controlling/adjusting the voltage. This can be improved by increasing the voltage reserve. Increasing the reserve reduces the steady-state maximum output voltage (r0071).

### p1580[0...n] Efficiency optimization / Efficiency opt.

- **PM230**

- **Access level:** 3  
- **Can be changed:** U, T  
- **Units group:** -  
- **Data type:** FloatingPoint32  
- **Data set:** DDS, p0180

- **Min:** 0 [%]  
- **Max:** 100 [%]  
- **Factory setting:** 80 [%]

**Description:** Sets the efficiency optimization.

When optimizing the efficiency, the flux setpoint of the closed-loop control is adapted as a function of the load.
For p1580 = 100 %, under no-load operating conditions, the flux setpoint is reduced to 50 % of the rated motor flux.

**Note:** It only makes sense to activate this function if the dynamic response requirements of the speed controller are low.
In order to avoid oscillations, if required, the speed controller parameters should be adapted (increase Tn, reduce Kp).
Further, the smoothing time of the flux setpoint filter (p1582) should be increased.
### p1580[0...n] Efficiency optimization / Efficiency opt.

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the efficiency optimization.</td>
<td></td>
<td>3</td>
<td></td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

**PM240**

- Can be changed: U, T
- Units group: -

**PM250, PM260**

- Can be changed: U, T
- Units group: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 [%]</td>
<td>100 [%]</td>
<td>0 [%]</td>
</tr>
</tbody>
</table>

- **Note:**
  - It only makes sense to activate this function if the dynamic response requirements of the speed controller are low.
  - In order to avoid oscillations, if required, the speed controller parameters should be adapted (increase Tn, reduce Kp).
  - Further, the smoothing time of the flux setpoint filter (p1582) should be increased.

### p1582[0...n] Flux setpoint smoothing time / Flux setp T_smth

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the smoothing time for the flux setpoint.</td>
<td></td>
<td>3</td>
<td>p0340 = 1,3</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

**PM240**

- Can be changed: U, T
- Units group: -

**PM250, PM260**

- Can be changed: U, T
- Units group: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 [ms]</td>
<td>5000 [ms]</td>
<td>15 [ms]</td>
</tr>
</tbody>
</table>

- **Note:**
  - Only the flux setpoint rise is smoothed

### r1583 Flux setpoint smoothed / Flux setp smooth

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the smoothed flux setpoint.</td>
<td></td>
<td>4</td>
<td></td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

**PM240**

- Can be changed: -
- Units group: -

**PM250, PM260**

- Can be changed: -
- Units group: -

<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:**
  - The value is referred to the rated motor flux.

### p1584[0...n] Field weakening operation, flux setpoint smoothing time / Field weak T_smth

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the smoothing time for the flux setpoint in the field-weakening range</td>
<td></td>
<td>4</td>
<td>p0340 = 1,3</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

**PM240**

- Can be changed: U, T
- Units group: -

**PM250, PM260**

- Can be changed: U, T
- Units group: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 [ms]</td>
<td>20000 [ms]</td>
<td>0 [ms]</td>
</tr>
</tbody>
</table>

- **Note:**
  - Only the flux setpoint rise is smoothed

### r1589 Field-weakening current, pre-control value / I_FieldWeak prectr

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the pre-control value for the field weakening current.</td>
<td></td>
<td>4</td>
<td></td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

**PM240**

- Can be changed: -
- Units group: 6_2

**PM250, PM260**

- Can be changed: -
- Units group: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>- [Arms]</td>
<td>- [Arms]</td>
<td>- [Arms]</td>
</tr>
</tbody>
</table>

- **Description:**
  - The value is referred to the rated motor flux.
### Parameters

#### Parameter list

**r1593[0...1]**  
**CO: Field weakening controller / flux controller output / Field/Fl_ctrl outp**

<table>
<thead>
<tr>
<th>Description</th>
<th>Index</th>
<th>Access level</th>
<th>Calculated</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Units group</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the output of the field weakening controller (synchronous motor).</td>
<td>[0] = PI output</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>p2002</td>
<td>6_2</td>
<td>-</td>
</tr>
<tr>
<td>[1] = I output</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

**Index:**
- [0] = PI output
- [1] = I output

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

**Description:**
Displays the output of the field weakening controller (synchronous motor).

**Index:**
- [0] = PI output
- [1] = I output

**Data type:** FloatingPoint32  
**Data set:** -

**p1594[0...n]**  
**Field-weakening controller, P gain / Field_ctrl Kp**

<table>
<thead>
<tr>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the P gain of the field-weakening controller.</td>
<td>4</td>
<td>-</td>
<td>U, T</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Min** 0.00  
**Max** 1000.00  
**Factory setting** 0.00

**Description:**
Sets the P gain of the field-weakening controller.

**Access level:** 4  
**Calculated:** -  
**Can be changed:** U, T  
**Units group:** -  
**Scaling:** p0202  
**Unit selection:** p0505  
**Data type:** FloatingPoint32  
**Data set:** DDS, p0180

**p1596[0...n]**  
**Field weakening controller integral-action time / Field_ctrl Tn**

<table>
<thead>
<tr>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the integral-action time of the field-weakening controller.</td>
<td>3</td>
<td>p0340 = 1,3,4</td>
<td>U, T</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Min** 10 [ms]  
**Max** 10000 [ms]  
**Factory setting** 300 [ms]

**Description:**
Sets the integral-action time of the field-weakening controller.

**Access level:** 3  
**Calculated:** p0340 = 1,3,4  
**Can be changed:** U, T  
**Units group:** -  
**Scaling:** -  
**Unit selection:** -  
**Data type:** FloatingPoint32  
**Data set:** DDS, p0180

**r1597**  
**CO: Field weakening controller output / Field_ctrl outp**

<table>
<thead>
<tr>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Units group</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the output of the field weakening controller.</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>The value is referred to the rated motor flux.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

**Min** - [%]  
**Max** - [%]  
**Factory setting** - [%]

**Description:**
Displays the output of the field weakening controller.
The value is referred to the rated motor flux.

**Access level:** 4  
**Can be changed:** -  
**Units group:** -  
**Scaling:** PERCENT  
**Unit selection:** -  
**Data type:** FloatingPoint32  
**Data set:** -

**r1598**  
**CO: Total flux setpoint / Flux setp total**

<table>
<thead>
<tr>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Units group</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the effective flux setpoint. The value is referred to the rated motor flux.</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Min** - [%]  
**Max** - [%]  
**Factory setting** - [%]

**Description:**
Displays the effective flux setpoint.
The value is referred to the rated motor flux.

**Access level:** 3  
**Can be changed:** -  
**Units group:** -  
**Scaling:** PERCENT  
**Unit selection:** -  
**Data type:** FloatingPoint32  
**Data set:** -

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### Parameters

#### p1610[0...n]
**Torque setpoint static (SLVC) / M_set static**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>2</td>
<td>Sets the static torque setpoint for sensorless vector control (SLVC).</td>
</tr>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td>This parameter is entered as a percentage referred to the rated motor torque (r0333).</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>For sensorless vector control, when the motor model is shut down, an absolute current is impressed. p1610 represents the maximum load that occurs at a constant setpoint speed.</td>
</tr>
<tr>
<td>Min</td>
<td>-200.0 [%]</td>
<td>Notice: p1610 should always be set to at least 10 % higher than the maximum steady-state load that can occur.</td>
</tr>
<tr>
<td>Max</td>
<td>200.0 [%]</td>
<td>Note: For p1610 = 0%, a current setpoint is calculated that corresponds to the no-load case (ASM: rated magnetizing current).</td>
</tr>
<tr>
<td>Factory setting</td>
<td>50.0 [%]</td>
<td>Negative values are converted into positive setpoints in the case of induction and permanent-magnet synchronous motors.</td>
</tr>
</tbody>
</table>

#### p1611[0...n]
**Supplementary accelerating torque (SLVC) / M_suppl_accel**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>2</td>
<td>Enters the dynamic torque setpoint for the low-speed range for sensorless vector control (SLVC). This parameter is entered as a percentage referred to the rated motor torque (r0333).</td>
</tr>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td>Note: When accelerating and braking p1611 is added to p1610 and the resulting total torque is converted into an appropriate current setpoint and controlled.</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>For pure accelerating torques, it is always favorable to use the torque pre-control of the speed controller (p1496).</td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [%]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>200.0 [%]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>30.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

#### r1614
**EMF maximum / EMF max**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>4</td>
<td>Displays the actual maximum possible electromotive force (EMF) of the separately-excited synchronous motor.</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
<td>Dependency: The value is the basis for the flux setpoint.</td>
</tr>
<tr>
<td>Units group</td>
<td>5_1</td>
<td>The maximum possible EMF depends on the following factors:</td>
</tr>
<tr>
<td>Min</td>
<td>- [Vrms]</td>
<td>- Actual DC link voltage (r0070).</td>
</tr>
<tr>
<td>Max</td>
<td>- [Vrms]</td>
<td>- Maximum modulation depth (p1803).</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [Vrms]</td>
<td>- Field-generating and torque-generating current setpoint.</td>
</tr>
</tbody>
</table>

#### p1616[0...n]
**Current setpoint smoothing time / I_set T_smooth**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>4</td>
<td>Sets the smoothing time for the current setpoint.</td>
</tr>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td>The current setpoint is generated from p1610 and p1611.</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>Note: This parameter is only effective in the range where current is injected for sensorless vector control.</td>
</tr>
<tr>
<td>Min</td>
<td>4 [ms]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>10000 [ms]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>40 [ms]</td>
<td></td>
</tr>
</tbody>
</table>
### r1623[0...1]
**Field-generating current setpoint (steady-state) / Id_set stationary**
- **Access level:** 4
- **Can be changed:** -
- **Units group:** 6_2
- **Min:** - [Arms]
- **Max:** - [Arms]
- **Description:** Displays the steady-state field generating current setpoint (Id_set).
- **Note:** Re index 1: Reserved.
- **Data type:** FloatingPoint32
- **Calculated:** -
- **Scaling:** p2002
- **Unit selection:** p0505
- **Data set:** -
- **Factory setting:** - [Arms]

### r1624
**Field-generating current setpoint, total / Id_set total**
- **Access level:** 4
- **Can be changed:** -
- **Units group:** 6_2
- **Min:** - [Arms]
- **Max:** - [Arms]
- **Description:** Displays the limited field-generating current setpoint (Id_set).
- **Note:** This value comprises the steady-state field-generating current setpoint r1623 and a dynamic component that is only set when changes are made to the flux setpoint.
- **Data type:** FloatingPoint32
- **Calculated:** -
- **Scaling:** p2002
- **Unit selection:** p0505
- **Data set:** -
- **Factory setting:** - [Arms]

### p1654[0...n]
**Curr. setpoint torque-gen. smoothing time field weakening range / Isq_s T_smth FW**
- **Access level:** 4
- **Can be changed:** U, T
- **Units group:** -
- **Min:** 0.1 [ms]
- **Max:** 50.0 [ms]
- **Description:** Sets the smoothing time constant for the setpoint of the torque-generating current components.
- **Note:** The smoothing time does not become effective until the field-weakening range is reached.
- **Data type:** FloatingPoint32
- **Calculated:** p0340 = 1
- **Scaling:** p0340 = 1
- **Unit selection:** -
- **Data set:** DDS, p0180
- **Factory setting:** 4.8 [ms]

### p1702[0...n]
**Isd current controller pre-control scaling / Isd_ctr_prectScal**
- **Access level:** 4
- **Can be changed:** U, T
- **Units group:** -
- **Min:** 0.0 [%]
- **Max:** 200.0 [%]
- **Description:** Sets the scaling of the dynamic current controller pre-control for the flux-generating current component Isd.
- **Note:** The parameter is effective for permanent-magnet synchronous motors.
- **Data type:** FloatingPoint32
- **Calculated:** -
- **Scaling:** -
- **Unit selection:** -
- **Data set:** DDS, p0180
- **Factory setting:** 70.0 [%]

### p1703[0...n]
**Isq current controller pre-control scaling / Isq_ctr_prectrScal**
- **Access level:** 4
- **Can be changed:** U, T
- **Units group:** -
- **Min:** 0.0 [%]
- **Max:** 200.0 [%]
- **Description:** Sets the scaling of the dynamic current controller pre-control for the torque/force-generating current component Isq.
- **Data type:** FloatingPoint32
- **Calculated:** p0340 = 1,3,4
- **Scaling:** -
- **Unit selection:** -
- **Data set:** DDS, p0180
- **Factory setting:** 60.0 [%]
Parameter list

**p1715[0...n]**  
**Current controller P gain / I_ctrl Kp**

- **Access level:** 4
- **Can be changed:** U, T
- **Units group:** -
- **Min:** 0.000
- **Max:** 100000.000
- **Factory setting:** 0.000

**Description:**
Sets the proportional gain of the current controller.
This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.

**Data type:** FloatingPoint32  
**Calculated:** p0340 = 1,3,4  
**Data set:** DDS, p0180

**p1717[0...n]**  
**Current controller integral-action time / I_ctrl Tn**

- **Access level:** 4
- **Can be changed:** U, T
- **Units group:** -
- **Min:** 0.00 [ms]
- **Max:** 1000.00 [ms]
- **Factory setting:** 2.00 [ms]

**Description:**
Sets the integral-action time of the current controller.

**Dependency:**
Refer to: p1715

**Data type:** FloatingPoint32  
**Calculated:** p0340 = 1,3,4  
**Data set:** DDS, p0180

**r1718**  
**CO: Isq controller output / Isq_ctrl outp**

- **Access level:** 4
- **Can be changed:** -
- **Units group:** 5_1
- **Min:** - [Vrms]
- **Max:** - [Vrms]

**Description:**
Displays the actual output of the Isq current controller (torque/force generating current, PI controller).
The value contains the proportional and integral components of the PI controller.

**Data type:** FloatingPoint32  
**Calculated:** -  
**Data set:** -

**r1719**  
**Isq controller integral component / Isq_ctrl I_comp**

- **Access level:** 4
- **Can be changed:** -
- **Units group:** 5_1
- **Min:** - [Vrms]
- **Max:** - [Vrms]

**Description:**
Displays the integral component of the Isq current controller (torque/force-generating current, PI controller).

**Data type:** FloatingPoint32  
**Calculated:** -  
**Data set:** -

**r1723**  
**CO: Isd controller output / Isd_ctrl outp**

- **Access level:** 4
- **Can be changed:** -
- **Units group:** 5_1
- **Min:** - [Vrms]
- **Max:** - [Vrms]

**Description:**
Displays the actual output of the Isd current controller (flux-generating current, PI controller).
The value contains the proportional and integral components of the PI controller.

**Data type:** FloatingPoint32  
**Calculated:** -  
**Data set:** -
## Parameters

### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Data type</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r1724</strong></td>
<td>Isd controller integral component / Isd_ctrl I_comp</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>5_1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>5_1</td>
<td>p0505</td>
<td>- [Vrms] - [Vrms] - [Vrms]</td>
</tr>
<tr>
<td><strong>r1725</strong></td>
<td>Isd controller integral component limit / Isd_ctrl I_limit</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>5_1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>5_1</td>
<td>p0505</td>
<td>- [Vrms] - [Vrms] - [Vrms]</td>
</tr>
<tr>
<td><strong>p1726[0...n]</strong></td>
<td>Quadrature arm decoupling, scaling / Transv_depl Scal</td>
<td>4</td>
<td>p0340 = 1</td>
<td>U, T</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>-</td>
<td>-</td>
<td>0.0 [%] 200.0 [%] 75.0 [%]</td>
</tr>
<tr>
<td><strong>p1727[0...n]</strong></td>
<td>Quadrature arm decoupling at voltage limit scaling / TrnsvDecplVmaxScal</td>
<td>4</td>
<td>-</td>
<td>U, T</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>-</td>
<td>-</td>
<td>0.0 [%] 200.0 [%] 50.0 [%]</td>
</tr>
<tr>
<td><strong>r1728</strong></td>
<td>De-coupling voltage, in-line axis / U_dir-axis_decoupl</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>5_1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>5_1</td>
<td>p0505</td>
<td>- [Vrms] - [Vrms] - [Vrms]</td>
</tr>
</tbody>
</table>

**Description:**
Displays the integral component of the Isd current controller (flux-generating current, PI controller).

**Description:**
Displays the limit value for the integral component of the Isd current controller.

**Description:**
Sets the scaling of the quadrature arm decoupling.

**Note:**
This parameter is ineffective for sensorless vector control. In this case, p1727 is always used. If p1726 is set to 0, then the quadrature de-coupling is de-activated. The integral component of the Isd current controller remains effective in the complete speed control range.

For the closed-loop control of synchronous motors, this parameter is used to scale the current controller de-coupling.

**Description:**
Sets the scaling of quadrature arm decoupling when the voltage limit is reached.

**Description:**
Displays the actual output of the quadrature channel de-coupling for the d axis.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
<th>Access level</th>
<th>Calculated</th>
<th>Scaling</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1729</td>
<td>De-coupling voltage, quadrature axis / U_quad_decoupl</td>
<td></td>
<td></td>
<td></td>
<td>- [Vrms]</td>
<td>4</td>
<td>-</td>
<td>p2001</td>
<td>FloatingPoint32</td>
<td>-</td>
</tr>
<tr>
<td>p1730</td>
<td>Isd controller integral component shutdown threshold / Isd_ctr I_compDeac</td>
<td></td>
<td>30 [%]</td>
<td>150 [%]</td>
<td>30 [%]</td>
<td>4</td>
<td>p0340 = 1,3,4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>p1731</td>
<td>Isd controller combination current time component / Isd ctrl iCombi T1</td>
<td></td>
<td>0.00 [ms]</td>
<td>10000.00 [ms]</td>
<td>0.00 [ms]</td>
<td>4</td>
<td>p0340 = 1,3,4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>r1732</td>
<td>CO: Direct-axis voltage setpoint / Direct U set</td>
<td></td>
<td></td>
<td></td>
<td>- [Vrms]</td>
<td>3</td>
<td>-</td>
<td>p2001</td>
<td>FloatingPoint32</td>
<td>-</td>
</tr>
<tr>
<td>r1733</td>
<td>CO: Quadrature-axis voltage setpoint / Quad U set</td>
<td></td>
<td></td>
<td></td>
<td>- [Vrms]</td>
<td>3</td>
<td>-</td>
<td>p2001</td>
<td>FloatingPoint32</td>
<td>-</td>
</tr>
</tbody>
</table>
Parameters

Parameter list

---

### p1740[0...n]

**Gain resonance damping for encoderless closed-loop control / Gain res_damp**

**Description:**
Defines the gain of the controller for resonance damping for operation with sensorless vector control in the range that current is injected.

**Access level:** 3
**Can be changed:** U, T
**Units group:** -

**Min**
0.000

**Max**
10.000

**Factory setting**
0.025

**Calculated:** p0340 = 1,3,4
**Data type:** FloatingPoint32
**Data set:** DDS, p0180

---

### p1745[0...n]

**Motor model error threshold stall detection / MotMod ThreshStall**

**Description:**
Sets the fault threshold in order to detect a motor that has stalled.

If the error signal (r1746) exceeds the parameterized error threshold, then status signal r1408.12 is set to 1.

**Dependency:**
If a stalled drive is detected (r1408.12 = 1), fault F07902 is output after the delay time set in p2178.

**Refer to:** p2178

**Note:**
Monitoring is only effective in the low-speed range (below p1755 * (100% - p1756)).

**Access level:** 3
**Can be changed:** U, T
**Units group:** -

**Min**
0.0 [%]

**Max**
1000.0 [%]

**Factory setting**
5.0 [%]

**Calculated:** p0340 = 1,3
**Data type:** FloatingPoint32
**Data set:** DDS, p0180

---

### r1746

**Motor model error signal stall detection / MotMod sig stall**

**Description:**
Signal to initiate stall detection

**Note:**
The signal is not calculated while magnetizing and only in the low speed range (below p1755 * (100 % - p1756)).

**Access level:** 3
**Can be changed:** -
**Units group:** -

**Min**
- [%]

**Max**
- [%]

**Factory setting**
- [%]

**Calculated:** -
**Data type:** FloatingPoint32
**Data set:** -

---

### p1749[0...n]

**Motor model increase changeover speed encoderless operation / IncrChgov enc-less**

**Description:**
Depending on the machine data, the drive has calculated a minimum value of the operating frequency for rugged operation.

If the minimum value is greater than the lower changeover limit parameterized with p1755 * (1 - 2 * p1756), then the difference is displayed using p1749 * p1755.

**Dependency:**
Refer to: p1755, p1756

**Access level:** 4
**Can be changed:** U, T
**Units group:** -

**Min**
0.0 [%]

**Max**
99.0 [%]

**Factory setting**
50.0 [%]

**Calculated:** p0340 = 1,3
**Data type:** FloatingPoint32
**Data set:** DDS, p0180

---

### p1750[0...n]

**Motor model configuration / MotMod config**

**PM230**

**Description:**
Sets the configuration for the motor model.

Bit 0 = 1: Forces open-loop speed-controlled starting (ASM).

**Access level:** 3
**Can be changed:** U, T
**Units group:** -

**Min**
- 

**Max**
- 

**Factory setting**
0000 1100 bin

**Calculated:** p0340 = 1,3,5
**Data type:** Unsigned8
**Data set:** DDS, p0180

---
Bit 1 = 1: Forces the system to pass through frequency zero, open-loop-controlled (ASM).
Bit 2 = 1: Drive remains in full closed-loop control mode, even at zero frequency (ASM).
Bit 3 = 1: Motor model evaluates the saturation characteristic (ASM).
Bit 6 = 1: If the motor is blocked, sensorless vector control remains speed-controlled (ASM).
Bit 7 = 1: Use rugged switchover limits to switchover the model (open-loop/closed-loop controlled) for regenerative operation (ASM).

### 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>Controlled start</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Controlled through 0 Hz</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Closed-loop ctrl oper. down to zero freq. for passive loads</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Motor model Lh_pre = f(PsiEst)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Closed-loop control when motor is blocked</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Use rugged changeover limits</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

### Dependency:
Refer to: p0500

### Caution:
Do not use bit 6 = 1 if the motor can be slowly reversed by the load at the torque limit. Long delay times due to blocking (p2177 > p1758) can cause the motor to stall. In this case you should de-activate the function or use closed-loop control throughout the speed range (note the information re bit 2 = 1).

### Note:
Bits 0 ... 2 only have an influence for encoderless vector control, bit 2 is pre-assigned depending on p0500.
Re bit 2 = 1:
The sensorless vector control is effective down to zero frequency. A change is not made into the open-loop speed controlled mode.
This operating mode is possible for passive loads. These include applications where the load itself does not generate any active torque and therefore only acts reactively to the drive torque of the induction motor.
If bit 2 = 1, then bit 3 is automatically set to 1. Manual de-selection is possible and may be sensible if the saturation characteristic (p1960) was not measured for third-party motors. Generally, for standard SIEMENS motors, the already pre-assigned (default value) saturation characteristic is adequate.
When the bit is set, the selection of bits 0 and 1 is ignored.
Re bit 2 = 0:
Bit 3 is also automatically deactivated.
Re bit 6 = 1:
The following applies for encoderless vector control of induction motors:
For a blocked motor (see p2175, p2177) the time condition in p1758 is bypassed and a change is not made into open-loop controlled operation.
Re bit 7 = 1:
The following applies for encoderless vector control of induction motors:
If the changeover limits are parameterized too low (p1755, p1756), then they are automatically increased to rugged values by the absolute amount p1749 * p1755.
The effective time condition for changing over into open-controlled operation is given by Min(p1758, 0.5 * r0384).
Activation can make sense for applications that demand a high torque at low frequencies and therefore low speed gradients.
It must be ensured that p1610, p1611 have been adequately parameterized.

### Motor model configuration / MotMod config

<table>
<thead>
<tr>
<th>PM240</th>
<th>PM250, PM260</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level: 3</td>
<td>Calculated: p0340 = 1,3,5</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: Unsigned8</td>
</tr>
<tr>
<td>Min -</td>
<td>Max -</td>
</tr>
<tr>
<td>Factory setting 0000 0000 bin</td>
<td></td>
</tr>
</tbody>
</table>

### Description:
Sets the configuration for the motor model.
Bit 0 = 1: Forces open-loop speed-controlled starting (ASM).
Bit 1 = 1: Forces the system to pass through frequency zero, open-loop-controlled (ASM).
Bit 2 = 1: Drive remains in full closed-loop control mode, even at zero frequency (ASM).
Bit 3 = 1: Motor model evaluates the saturation characteristic (ASM).
Bit 6 = 1: If the motor is blocked, sensorless vector control remains speed-controlled (ASM).

Bit 7 = 1: Use rugged switchover limits to switchover the model (open-loop/closed-loop controlled) for regenerative operation (ASM).

### 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>Controlled start</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Controlled through 0 Hz</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Closed-loop ctrl oper. down to zero freq. for passive loads</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Motor model Lh_pre = f(PsiEst)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Closed-loop control when motor is blocked</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Use rugged changeover limits</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

### Dependency:
Refer to: p0500

### Caution:
Do not use bit 6 = 1 if the motor can be slowly reversed by the load at the torque limit. Long delay times due to blocking (p2177 > p1758) can cause the motor to stall. In this case you should de-activate the function or use closed-loop control throughout the speed range (note the information re bit 2 = 1).

### Note:

Bits 0 ... 2 only have an influence for encoderless vector control, bit 2 is pre-assigned depending on p0500.

Re bit 2 = 1:
The sensorless vector control is effective down to zero frequency. A change is not made into the open-loop speed controlled mode.

This operating mode is possible for passive loads. These include applications where the load itself does not generate any active torque and therefore only acts reactively to the drive torque of the induction motor.

If bit 2 = 1, then bit 3 is automatically set to 1. Manual de-selection is possible and may be sensible if the saturation characteristic (p1960) was not measured for third-party motors. Generally, for standard SIEMENS motors, the already pre-assigned (default value) saturation characteristic is adequate.

When the bit is set, the selection of bits 0 and 1 is ignored.

Re bit 2 = 0:
Bit 3 is also automatically deactivated.

Re bit 6 = 1:
The following applies for encoderless vector control of induction motors:

For a blocked motor (see p2175, p2177) the time condition in p1758 is bypassed and a change is not made into open-loop controlled operation.

Re bit 7 = 1:
The following applies for encoderless vector control of induction motors:

If the changeover limits are parameterized too low (p1755, p1756), then they are automatically increased to rugged values by the absolute amount p1749 * p1755.

The effective time condition for changing over into open-controlled operation is given by Min(p1758, 0.5 * r0384). Activation can make sense for applications that demand a high torque at low frequencies and therefore low speed gradients.

It must be ensured that p1610, p1611 have been adequately parameterized.

### r1751 Motor model status / MotMod status

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Description:
Displays the status of the motor model.

### 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>Controlled operation</td>
<td>Active</td>
<td>Inactive</td>
<td>6721</td>
</tr>
<tr>
<td>01</td>
<td>Set ramp-function generator</td>
<td>Active</td>
<td>Inactive</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Stop RsLh adaptation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Feedback</td>
<td>Active</td>
<td>Inactive</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Holding angle</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Acceleration criterion</td>
<td>Active</td>
<td>Inactive</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Set angular integrator PEM</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Stop Kt adaptation PEM</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>PolID active PEM SLVC</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Rs adapt waits</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Stator frequency sign</td>
<td>Positive</td>
<td>Negative</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Current feedback in the current model</td>
<td>Active</td>
<td>Inactive</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- Displays the status when enabling the rugged model feedback (p1784) for operation with and without encoder.
- The feedback is used to increase the parameter ruggedness of the motor model and is effective in the operating range of the two-component closed loop current control.
- Displays the status when enabling the differential current feedback in the current model for operation with encoder.
- The function is automatically enabled with p1784 > 0 or p1731 > 0. The feedback is used for a rugged change between the current model and complete machine model with active rugged model feedback and combination current.
- Displays the currently active stator circuit feedback in current model operation.
- Displays the currently effective increase of the changeover limits by the value p1749 * p1755.

**p1755[0...n]**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor model changeover speed encoderless operation / MotMod n_chgSnsor</td>
<td>3</td>
<td>U, T</td>
<td>3_1</td>
<td>p0340 = 1.3</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

**Description:** Sets the speed to change over the motor model to encoderless operation.

**Dependency:** Refer to: p1749, p1756

**Notice:** The changeover speed represents the steady-state minimum speed up to which the motor model can be used in steady-state operation without encoder.

If the stability is not adequate close to the changeover speed, it may make sense to increase the parameter value.

**Note:** The changeover speed applies for the changeover between open-loop and closed-loop control mode.

**p1756**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor model changeover speed hysteresis encoderless operation / MotMod n_chgov hys</td>
<td>3</td>
<td>U, T</td>
<td>-</td>
<td>p0340 = 1.3</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

**Description:** Sets the hysteresis for the changeover speed of the motor model for encoderless operation.

**Dependency:** Refer to: p1755

**Note:** The parameter value refers to p1755.
### Motor model changeover delay time closed/open-loop control / MotMod t cl_op

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1758[0...n]</td>
<td>Sets the minimum time for falling below the changeover speed when changing from closed-loop controlled operation to open-loop controlled operation.</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>Units group</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>100 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>10000 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>500 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Motor model changeover delay time open/closed-loop control / MotMod t op_cl

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1759[0...n]</td>
<td>Sets the minimum time for exceeding the changeover speed when changing from open-loop controlled operation to closed-loop controlled operation.</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>Units group</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 [ms]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>2000 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Motor model deviation component 1 / MotMod dev comp 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1762[0...1]</td>
<td>Displays the referred imaginary system deviation for the adaptation circuit of the motor model. Permanent-magnet synchronous motor (PESM): Displays the system deviation for speed adaptation. Angular deviation [rad-el] of the estimated EMF. The low-level signal response for pulse technique.</td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Units group</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>Max</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

### Motor model deviation component 2 / MotMod dev comp 2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1763</td>
<td>Displays the referred real system deviation for the adaptation circuit of the motor model. Permanent-magnet synchronous motor (PESM): Not used.</td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Units group</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>Max</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1764[0...n]</td>
<td><strong>Motor model without encoder speed adaptation Kp / MotMod woE n_adaKp</strong></td>
</tr>
<tr>
<td>Access level: 4</td>
<td>Calculated: p0340 = 1,3,4</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min 0.000</td>
<td>Max 1000000.000</td>
</tr>
<tr>
<td>Factory setting 1000.000</td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the proportional gain of the controller for speed adaptation without encoder.</td>
</tr>
</tbody>
</table>

| r1765 | **Motor model, speed adaptation Kp effective / MotM n_ada Kp act** |
| Access level: 4 | Calculated: - |
| Can be changed: - | Scaling: p2001 |
| Units group: - | Unit selection: - |
| Min - | Max - |
| Factory setting - | - |
| Description: | Displays the effective proportional gain of the controller for the speed adaptation. |

| p1767[0...n] | **Motor model without encoder speed adaptation Tn / MotMod woE n_adaTn** |
| Access level: 4 | Calculated: p0340 = 1,3,4 |
| Can be changed: U, T | Scaling: - |
| Units group: - | Unit selection: - |
| Min 1 [ms] | Max 200 [ms] |
| Factory setting 4 [ms] | |
| Description: | Sets the integral time of the controller for speed adaptation without encoder. |

| r1768 | **Motor model, speed adaptation Vi effective / MotM n_ada Vi act** |
| Access level: 4 | Calculated: - |
| Can be changed: - | Scaling: p2001 |
| Units group: - | Unit selection: - |
| Min - | Max - |
| Factory setting - | - |
| Description: | Displays the effective gain of the integral component of the controller for speed adaptation. |

| r1770 | **CO: Motor model speed adaptation proportional component / MotMod n_adapt Kp** |
| Access level: 4 | Calculated: - |
| Can be changed: - | Scaling: p2000 |
| Units group: 3_1 | Unit selection: p0505 |
| Min - [rpm] | Max - [rpm] |
| Factory setting - [rpm] | - [rpm] |
| Description: | Displays the P component of the controller for speed adaptation. |

| r1771 | **CO: Motor model speed adaptation I comp. / MotMod n_adapt Tn** |
| Access level: 4 | Calculated: - |
| Can be changed: - | Scaling: p2000 |
| Units group: 3_1 | Unit selection: p0505 |
| Min - [rpm] | Max - [rpm] |
| Factory setting - [rpm] | - [rpm] |
| Description: | Displays the I component of the controller for speed adaptation. |
Parameters

Parameter list

### r1773[0...1] Motor model slip speed / MotMod slip

**Access level:** 4  
**Can be changed:** -  
**Units group:** 3_1  
**Min:** - [rpm]  
**Max:** - [rpm]  

**Description:** Displays estimated (speed) signals of the motor model.

- **r1773[0]:** Displays the estimated (mechanical) slip of the motor model.
- **r1773[1]:** Displays the estimated input speed of the motor model.

**Index:**

- [0] = Slip speed estimated
- [1] = Speed estimated

### p1774[0...n] Motor model, offset voltage compensation alpha / MotMod offs comp A

**Access level:** 4  
**Can be changed:** U, T  
**Units group:** -  
**Min:** -5.000 [V]  
**Max:** 5.000 [V]  

**Description:** Sets the offset voltage in the alpha direction; this compensates the offset voltages of the drive converter/inverter at low speeds. The value is valid for the rated (nominal) pulse frequency of the power unit.

**Note:** The value is pre-set during the rotating measurement.

### p1775[0...n] Motor model, offset voltage compensation beta / MotMod offs comp B

**Access level:** 4  
**Can be changed:** U, T  
**Units group:** -  
**Min:** -5.000 [V]  
**Max:** 5.000 [V]  

**Description:** Sets the offset voltage in the beta direction; this compensates the offset voltages of the drive converter/inverter at low speeds. The value is valid for the rated (nominal) pulse frequency of the power unit.

**Note:** The value is pre-set during the rotating measurement.

### r1776[0...6] Motor model status signals / MotMod status sig

**Access level:** 4  
**Can be changed:** -  
**Units group:** -  

**Description:** Displays the internal status signals of the motor model:

- **Index 0:** Changeover ramp between current and voltage models
- **Index 1:** Changeover ramp for model tracking (encoderless induction motors only)
- **Index 2:** Changeover ramp for zero frequency range (encoderless induction motors only)
- **Index 6:** Transition ramp for EMF deviation at PLL input (encoderless PESM)

**Index:**

- [0] = Changeover ramp motor model
- [1] = Changeover ramp model tracking
- [2] = Changeover ramp zero frequency encoderless ASM
- [3] = Reserved
- [4] = Reserved
- [5] = Reserved
- [6] = Changeover ramp motor model encoderless PESM
### r1778 Motor model flux angle difference / MotMod ang. diff.

- **Access level:** 4
- **Can be changed:** -
- **Units group:** -

<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 difference between the motor model flux angle and the transformation angle.

**Dependency:**
A setting for smoothing the display can be made using p1754.

### p1780[0...n] Motor model adaptation configuration / MotMod adapt conf

- **Access level:** 4
- **Can be changed:** U, T
- **Units group:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>0000 0000 0101 1100 bin</td>
</tr>
</tbody>
</table>

**Description:**
Sets the configuration for the adaptation circuit of the motor model.

- **Induction motor (ASM):** Rs, Lh, and offset compensation.
- **Permanent magnet synchronous motor (PEM):** kT

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Select motor model ASM Rs adaptation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Select motor model ASM Lh adaptation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Select motor model PEM kT adaptation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Select motor model offset adaptation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Select pole position identification PEM encoderless</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Select T(valve) with Rs adaptation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Filter time combination current like current ctrl integral time</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
- In U/f characteristic operating mode only bit 7 is relevant.
- For active motor model feedback (see p1784), the Lh adaptation is internally deactivated automatically.

**Note:**
- **ASM:** Induction motor
- **PEM:** Permanent magnet synchronous motor

When selecting the compensation of the valve interlocking via Rs (bit 7), the compensation in the gating unit is de-activated and is instead taken into account in the motor model.

In order that the correction values of the Rs, Lh and kT adaptation (selected using Bit 0 … Bit 2) are correctly accepted when changing over the drive data set, a dedicated motor number must be entered into p0826 for each different motor.

### p1784[0...n] Motor model feedback scaling / MotMod fdbk scal

- **Access level:** 4
- **Can be changed:** U, T
- **Units group:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 [%]</td>
<td>1000.0 [%]</td>
<td>0.0 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the scaling for model fault feedback.

**Note:**
- Feeding back the measured model fault to the model states increases the control stability and makes the motor model rugged against parameter errors.
- When feedback is selected (p1784 > 0), Lh adaptation is not effective.
### Parameter List

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access Level</th>
<th>Calculated</th>
<th>Data Type</th>
<th>Can be Changed</th>
<th>Scaling</th>
<th>Data Set</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1785[0...n]</td>
<td>Motor model Lh adaptation Kp / MotMod Lh Kp</td>
<td>4</td>
<td>p0340 = 1,3,4</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>p1786[0...n]</td>
<td>Motor model Lh adaptation integral time / MotMod Lh Tn</td>
<td>4</td>
<td>p0340 = 1,3,4</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>r1787[0...n]</td>
<td>Motor model Lh adaptation corrective value / MotMod Lh corr</td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>r1791</td>
<td>Motor model Lh adaptation power-on frequency / MotMod Lh f_on</td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>r1792</td>
<td>Motor model Lh adaptation power-on slip / MotMod Lh fslip</td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### p1795[0...n] Motor model kT adaptation integral time / MotMod kT Tn

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
<th>Calculated:</th>
<th>p0340 = 1,3,4</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 [ms]</td>
<td>10000 [ms]</td>
<td>100 [ms]</td>
</tr>
</tbody>
</table>

**Description:** Sets the integral time of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PEM).

### r1797[0...n] Motor model kT adaptation corrective value / MotMod kT corr

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>- [Nm/A]</td>
<td>- [Nm/A]</td>
<td>- [Nm/A]</td>
</tr>
</tbody>
</table>

**Description:** Displays the corrective value of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PEM).

**Dependency:** Refer to: p0826, p1780

**Note:** The display of the inactive data sets is only updated when changing over the data set.

### p1800[0...n] Pulse frequency setpoint / Pulse freq setp

<table>
<thead>
<tr>
<th>Access level:</th>
<th>2</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.000 [kHz]</td>
<td>16.000 [kHz]</td>
<td>4.000 [kHz]</td>
</tr>
</tbody>
</table>

**Description:** Sets the pulse frequency for the converter.

This parameter is pre-set to the rated converter value when the drive is first commissioned.

**Dependency:** Refer to: p0230

**Note:**
- The maximum possible pulse frequency is also determined by the power unit being used.
- When the pulse frequency is increased, depending on the particular power unit, the maximum output current can be reduced (derating, refer to r0067).
- If a sine-wave filter is parameterized as output filter (p0230 = 3), then the pulse frequency cannot be set below the minimum value required for the filter.
- For operation with output reactors, the pulse frequency is limited to 4 kHz (see p0230).
- If p1800 is changed during commissioning (p0010 > 0), then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of p1800 have been changed by a parameter that was set when the drive was commissioned (e.g. p1082).

### r1801[0...1] CO: Pulse frequency / Pulse frequency

<table>
<thead>
<tr>
<th>Access level:</th>
<th>2</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>p2000</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>- [kHz]</td>
<td>- [kHz]</td>
<td>- [kHz]</td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the actual converter switching frequency.

**Index:**
- [0] = Actual
- [1] = Modulator minimum value

**Note:** The selected pulse frequency (p1800) may be reduced if the drive converter has an overload condition (p0290).
Description:
Sets the modulator mode.

Value:
0: Automatic changeover SVM/FLB
2: Space vector modulation (SVM)
3: SVM without overcontrol
4: SVM/FLB without overcontrol
10: SVM/FLB with modulation depth reduction
19: Optimized pulse pattern

Dependency:
If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only space vector modulation without overcontrol can be selected as modulation type (p1802 = 3). This is not valid for the power units PM260. p1802 = 10 can only be set for the PM230 and PM240 power units.

Refer to: p0230, p0500

Note:
When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 2, 10), the modulation depth must be limited using p1803 (default, p1803 = 98%). The higher the overmodulation, the greater the current ripple and torque ripple. With p1802 = 10, the modulation depth limit is automatically reduced to 100% in the critical output frequency range (over approx. 57 Hz).

When changing p1802[x], the values for all of the other existing indices are also changed.
3: SVM without overcontrol
4: SVM/FLB without overcontrol

**Dependency:**
If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only space vector modulation without overcontrol can be selected as modulation type (p1802 = 3). This is not valid for the power units PM260, p1802 = 10 can only be set for the PM230 and PM240 power units.

Refer to: p0230, p0500

**Note:**
When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 2, 10), the modulation depth must be limited using p1803 (default p1803 < 100 %). The higher the overmodulation, the greater the current ripple and torque ripple.

When changing p1802[x], the values for all of the other existing indices are also changed.

<table>
<thead>
<tr>
<th>p1803[0...n]</th>
<th>Maximum modulation depth / Modulat depth max</th>
<th>p1806[0...n]</th>
<th>Filter time constant Vdc correction / T_filt Vdc_corr</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM230</td>
<td>Access level: 3</td>
<td>Calculated: p0340 = 1,3,5</td>
<td>Calculated: p0340 = 1,3</td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td></td>
<td>Min 20.0 [%]</td>
<td>Max 120.0 [%]</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Factory setting 115.0 [%]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Defines the maximum modulation depth.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Dependency:</strong> Refer to: p0500</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> p1803 = 100 % is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM240</td>
<td>Access level: 3</td>
<td>Calculated: p0340 = 1,3,5</td>
<td>Calculated: p0340 = 1,3</td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td></td>
<td>Min 20.0 [%]</td>
<td>Max 150.0 [%]</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Factory setting 106.0 [%]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Defines the maximum modulation depth.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Dependency:</strong> Refer to: p0500</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> p1803 = 100 % is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM250/PM260</td>
<td>Access level: 3</td>
<td>Calculated: p0340 = 1,3,5</td>
<td>Calculated: p0340 = 1,3</td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td></td>
<td>Min 20.0 [%]</td>
<td>Max 150.0 [%]</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Factory setting 106.0 [%]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Defines the maximum modulation depth.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Dependency:</strong> Default setting PM260: 103 %.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refer to: p0500</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> p1803 = 100 % is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Filter time constant Vdc correction / T_filt Vdc_corr</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access level: 4</td>
<td>Calculated: p0340 = 1,3</td>
<td>Calculated: p0340 = 1,3</td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td></td>
<td>Min 0.0 [ms]</td>
<td>Max 10000.0 [ms]</td>
<td>Factory setting 0.0 [ms]</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Sets the filter time constant of the DC link voltage used to calculate the modulation depth.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r1808</strong></td>
<td>DC link voltage actual value for U_max calculation / Vdc act val U_max</td>
</tr>
<tr>
<td>Access level: 4</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Units group: 5_2</td>
<td>Unit selection: p0505</td>
</tr>
<tr>
<td><strong>min</strong></td>
<td><strong>max</strong></td>
</tr>
<tr>
<td>- [V]</td>
<td>- [V]</td>
</tr>
<tr>
<td><strong>r1809</strong></td>
<td>CO: Modulator mode actual / Modulator mode act</td>
</tr>
<tr>
<td>Access level: 4</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>min</strong></td>
<td><strong>max</strong></td>
</tr>
<tr>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td><strong>p1810</strong></td>
<td>Modulator configuration / Modulator config</td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>min</strong></td>
<td><strong>max</strong></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### 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>Avg value filter for U_lim (only for Vdc_comp. in modulator)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DC link voltage compensation in the current control</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notice:** Bit 1 = 1 can only be set under a pulse inhibit and for r0192.14 = 1.

**Note:**
- Re bit 00 = 0:
  Voltage limitation from the minimum of the DC link voltage (lower ripple in the output current, reduced output voltage).
- Re bit 00 = 1:
  Voltage limitation from averaged DC link voltage (higher output voltage with increased ripple in the output current). The selection is only valid if the DC link compensation is not performed in the Control Unit (bit 1 = 0).
- Re bit 01 = 0:
  DC link voltage compensation in the modulator.
- Re bit 01 = 1:
  DC link voltage compensation in the current control.

<table>
<thead>
<tr>
<th><strong>p1820[0...n]</strong></th>
<th>Reverse the output phase sequence / Outp_ph_seq rev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level: 2</td>
<td>Can be changed: C(2), T</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>min</strong></td>
<td><strong>max</strong></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:** Sets the phase sequence reversal for the motor without setpoint change.

If the motor does not rotate in the required direction, then the output phase sequence can be reversed using this parameter. This means that the direction of the motor is reversed without the setpoint being changed.
Value: 0: OFF  
1: ON

Note: This setting can only be changed when the pulses are inhibited.

### p1825 Converter valve threshold voltage / Threshold voltage

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
<th>Calculated:</th>
<th>p0340 = 1</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [Vrms]</td>
<td>Max</td>
<td>100.0 [Vrms]</td>
<td>Factory setting</td>
<td>0.6 [Vrms]</td>
</tr>
</tbody>
</table>

Description: Sets the threshold voltage drop of the valves (power semiconductor devices) to be compensated.

Note: The value is automatically calculated in the motor data identification routine.

### p1828 Compensation valve lockout time phase U / Comp t_lock ph U

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
<th>Calculated:</th>
<th>p0340 = 1</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [µs]</td>
<td>Max</td>
<td>3.99 [µs]</td>
<td>Factory setting</td>
<td>0.00 [µs]</td>
</tr>
</tbody>
</table>

Description: Sets the valve lockout time to compensate for phase U.

Note: The value is automatically calculated in the motor data identification routine.

### p1829 Compensation valve lockout time phase V / Comp t_lock ph V

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
<th>Calculated:</th>
<th>p0340 = 1</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [µs]</td>
<td>Max</td>
<td>3.99 [µs]</td>
<td>Factory setting</td>
<td>0.00 [µs]</td>
</tr>
</tbody>
</table>

Description: Sets the valve lockout time to compensate for phase V.

### p1830 Compensation valve lockout time phase W / Comp t_lock ph W

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
<th>Calculated:</th>
<th>p0340 = 1</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [µs]</td>
<td>Max</td>
<td>3.99 [µs]</td>
<td>Factory setting</td>
<td>0.00 [µs]</td>
</tr>
</tbody>
</table>

Description: Sets the valve lockout time to compensate for phase W.

### p1832 Dead time compensation current level / t_dead_comp I_lev

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
<th>Calculated:</th>
<th>p0340 = 1</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [Arms]</td>
<td>Max</td>
<td>10000.0 [Arms]</td>
<td>Factory setting</td>
<td>0.0 [Arms]</td>
</tr>
</tbody>
</table>

Description: Sets the current level for the dead time compensation. Above the current level, the dead time - resulting from the converter switching delays - is compensated by a previously calculated constant value. If the relevant phase current setpoint falls below the absolute value defined by p1832, the corrective value for this phase is continuously reduced.

Dependency: The factory setting of p1832 is automatically set to 0.02 * rated drive converter current (r0207).
### p1900 Motor data identification and rotating measurement / MotID and rot meas

| Access level: | 2 |
| Calculated: | - |
| Can be changed: | C(1), T |
| Units group: | - |
| Scaling: | - |
| Unit selection: | - |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Description:
Sets the motor data identification and speed controller optimization.

The motor identification should first be performed with the motor stationary (p1900 = 1, 2; also refer to p1910). Based on this, additional motor and control parameters can be determined using the motor data identification with the motor rotating (p1900 = 1, 3; also refer to p1960).

**p1900 = 0:**
Function inhibited.

**p1900 = 1:**
Sets p1910 = 1 and p1960 = 0, 1 depending on p1300. When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next power-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution. With the following power-on command, a rotating motor data identification routine is carried out - and in addition, a speed controller optimization by making measurements at different motor speeds.

**p1900 = 2:**
Sets p1910 = 1 and p1960 = 0. When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next power-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution.

**p1900 = 3:**
Sets p1960 = 0, 1 depending on p1300. This setting should only be selected if the motor data identification was already carried out at standstill. When the drive enable signals are present, with the next power-on command, a rotating motor data identification routine is carried out - and in addition, speed controller optimization by taking measurements at different motor speeds.

#### Value:
- **0:** Inhibited
- **1:** Identify motor data at standstill and with motor rotating
- **2:** Identify motor data at standstill
- **3:** Identify motor data with motor rotating

#### Dependency:
- Refer to: p1300, p1910, p1960
- Refer to: A07980, A07981, F07983, F07984, F07985, F07986, F07988, F07990, A07991

#### Notice:
- p1900 = 3:
This setting should only be selected if the motor data identification was already carried out at standstill. If there is a motor holding brake, it must be open (p1215 = 2).
To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971). For p0014 = 1, 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 motor and control parameters are only optimally set when both measurements are carried out (initially at standstill, and then with the motor rotating).

An appropriate alarm is output when the parameter is set. The power-on command must remain set during a measurement and after the measurement has been completed, the drive automatically resets it. The duration of the measurements can lie between 0.3 s and several minutes. This time is, for example, influenced by the motor size and the mechanical conditions.

p1900 is automatically set to 0 after the motor data identification routine has been completed.
### p1901 Test pulse evaluation configuration / Test puls config

- **Access level:** 3  
- **Calculated:** p0340 = 1  
- **Data type:** Unsigned32

- **Can be changed:** T  
- **Scaling:** -  
- **Data set:** -

- **Units group:** -  
- **Unit selection:** -

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Phase short-circuit test pulse active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Ground fault detection test pulse active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Test pulse at each pulse enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

- **Dependency:** Refer to: p0287
- **Note:**
  - Re bit 02=0: If the test was successful once after POWER ON (see r1902.0), it is not repeated.
  - Re bit 02=1: The test is not only performed after POWER ON, but also each time the pulses are enabled.
  - If a conductor-to-conductor short-circuit is detected during the test, this is displayed in r1902.1.
  - If a ground fault is detected during the test, this is displayed in r1902.2.

### r1902 Test pulse evaluation status / Test puls ev stat

- **Access level:** 4  
- **Calculated:** -  
- **Data type:** Unsigned32

- **Can be changed:** -  
- **Scaling:** -  
- **Data set:** -

- **Units group:** -  
- **Unit selection:** -

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Short-circuit test executed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Phase short-circuit detected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Ground fault test successfully performed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Ground fault detected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Identification pulse width greater than the minimum pulse width</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

- **Dependency:** Displays the status of the test pulse evaluation.
- **Note:**
  - Bit 0: The short-circuit test was executed without any fault.
  - Bit 1: A phase short circuit has been detected.
  - Bit 2: A ground fault test was successfully performed.
  - Bit 3: A ground fault was detected.
  - Bit 4: A test pulse longer than one sampling time has occurred

- If the ground fault test was selected, but not successfully performed, then sufficient current will not be able to be established during the test pulse.
### p1909[0...n] Motor data identification control word / MotID STW

<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>Stator inductance estimate no measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Rotor time constant estimate no measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Leakage inductance estimate no measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Determine Tr and Lsig evaluation in the time range</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Activate vibration damping</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>De-activate vibration detection</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>De-activate pulse measurement Lq Ld</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>De-activate rotor resistance Rr measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>De-activate valve interlocking time measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Determine only stator resistance, valve voltage fault, dead time</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Short motor identification (lower quality)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Sets the configuration for the motor data identification.

**Note:**
The following applies to permanent-magnet synchronous motors:
Without de-selection in bit 11, in the closed-loop control mode, the direct inductance LD and the quadrature inductance Lq are measured at a low current.
When de-selecting with bit 11 or in the U/f mode, the stator inductance is measured at half the rated motor current. If the stator is inductance is not measured but is to be estimated, then bit 0 should be set and bit 11 should be de-selected.

### p1910 Motor data identification selection / MotID selection

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>26</td>
<td>0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 bin</td>
</tr>
</tbody>
</table>

**Description:**
Sets the motor data identification routine.

The motor data identification routine is carried out after the next power-on command.

### Value:
0: Inhibited
1: Complete identification (ID) and acceptance of motor data
2: Complete identification (ID) of motor data without acceptance
20: Voltage vector input
21: Voltage vector input without filter
22: Rectangular voltage vector input without filter
23: Triangular voltage vector input without filter
Parameter list

Parameter

24: Rectangular voltage vector input with filter
25: Triangular voltage vector input with filter
26: Enter voltage vector with DTC correction

Dependency:
"Quick commissioning" must be carried out (p0010 = 1, p3900 > 0) before executing the motor data identification routine!
When selecting the motor data identification routine, the drive data set changeover is suppressed.

Refer to: p1900

Caution:
After the motor data identification (p1910 > 0) has been selected, alarm A07991 is output and a motor data identification routine is carried out as follows at the next power-on command:
- current flows through the motor and a voltage is present at the drive converter output terminals.
- during the identification routine, the motor shaft can rotate through a maximum of half a revolution.
- however, no torque torque is generated.

Notice:
If there is a motor holding brake, it must be open (p1215 = 2).
To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971).

Note:
When setting p1910, the following should be observed:
1. "With acceptance" means:
The parameters specified in the description are overwritten with the identified values and therefore have an influence on the controller setting.
2. "Without acceptance" means:
The identified parameters are only displayed in the range r1912 ... r1926 (service parameters). The controller settings remain unchanged.

### p1911 Number of phases to be identified / Qty ph to ident

| Access level: | 4 |
| Calculated:  | - |
| Can be changed: | T |
| Units group: | - |
| Min | 1 |
| Max | 3 |

**Description:** Sets the number of phases to be identified.

**Value:**
1: 1 phase U
2: 2 phases U, V
3: 3 phases U, V, W

**Note:**
When identifying with several phases, the accuracy increases and also the time it takes to make the measurement.

### r1912[0...2] Identified stator resistance / R_stator ident

| Access level: | 4 |
| Calculated:  | - |
| Can be changed: | - |
| Units group: | - |
| Min | - [ohm] |
| Max | - [ohm] |

**Description:** Displays the identified stator resistance.

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

### r1913[0...2] Identified rotor time constant / TRotor ident

| Access level: | 4 |
| Calculated:  | - |
| Can be changed: | - |
| Units group: | - |
| Min | - [ms] |
| Max | - [ms] |

**Description:** Displays the identified rotor time constant.
# Parameters

## Parameter list

<table>
<thead>
<tr>
<th>Index</th>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0...2]</td>
<td>r1914</td>
<td>Identified total leakage inductance / L_total_leak_ident</td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>mH</td>
<td>mH</td>
<td>mH</td>
</tr>
<tr>
<td>[0...2]</td>
<td>r1915</td>
<td>Identified nominal stator inductance / L_stator_ident</td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>mH</td>
<td>mH</td>
<td>mH</td>
</tr>
<tr>
<td>[0...2]</td>
<td>r1916</td>
<td>Identified stator inductance 1 / L_stator_1_ident</td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>mH</td>
<td>mH</td>
<td>mH</td>
</tr>
<tr>
<td>[0...2]</td>
<td>r1917</td>
<td>Identified stator inductance 2 / L_stator_2_ident</td>
<td>4</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>mH</td>
<td>mH</td>
<td>mH</td>
</tr>
</tbody>
</table>

Description:
- Displays the identified total leakage inductance.
- Displays the nominal stator inductance identified.
- Displays the nominal stator inductance identified for the 1st point of the saturation characteristic.
- Displays the nominal stator inductance identified for the 2nd point of the saturation characteristic.

Access level: 4
Can be changed: -
Units group: -
Min: - [mH]
Max: - [mH]
Factory setting: - [mH]
## r1918[0...2] Identified stator inductance 3 / L\_stator 3 ident

| Access level: | 4 |
| Can be changed: | - |
| Calculated: | - |
| Units group: | - |
| Data type: | FloatingPoint32 |
| Scaling: | - |
| Unit selection: | - |
| Data set: | - |

**Description:** Displays the nominal stator inductance identified for the 3rd point of the saturation characteristic.

**Index:**

- [0] = Phase U
- [1] = Phase V
- [2] = Phase W

### r1919[0...2] Identified stator inductance 4 / L\_stator 4 ident

| Access level: | 4 |
| Can be changed: | - |
| Calculated: | - |
| Units group: | - |
| Data type: | FloatingPoint32 |
| Scaling: | - |
| Unit selection: | - |
| Data set: | - |

**Description:** Displays the nominal stator inductance identified for the 4th point of the saturation characteristic.

**Index:**

- [0] = Phase U
- [1] = Phase V
- [2] = Phase W

### r1925[0...2] Identified threshold voltage / U\_threshold ident

| Access level: | 4 |
| Can be changed: | - |
| Calculated: | - |
| Units group: | - |
| Data type: | FloatingPoint32 |
| Scaling: | - |
| Unit selection: | - |
| Data set: | - |

**Description:** Displays the identified IGBT threshold voltage.

**Index:**

- [0] = Phase U
- [1] = Phase V
- [2] = Phase W

### r1926[0...2] Identified effective valve lockout time / t\_lock_valve id

| Access level: | 4 |
| Can be changed: | - |
| Calculated: | - |
| Units group: | - |
| Data type: | FloatingPoint32 |
| Scaling: | - |
| Unit selection: | - |
| Data set: | - |

**Description:** Displays the identified effective valve lockout time.

**Index:**

- [0] = Phase U
- [1] = Phase V
- [2] = Phase W

### r1927[0...2] Identified rotor resistance / R\_rotor ident

| Access level: | 4 |
| Can be changed: | - |
| Calculated: | - |
| Units group: | - |
| Data type: | FloatingPoint32 |
| Scaling: | - |
| Unit selection: | - |
| Data set: | - |
| Index: | - [ohm] |

**Description:** Displays identified rotor resistance (on separately excited synchronous motors: damping resistance).
### Index:

- [0] = Phase U
- [1] = Phase V
- [2] = Phase W

### p1959[0...n] Rotating measurement configuration / Rot meas config

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Saturation characteristic identification</td>
<td>Yes</td>
<td>No</td>
<td>0001 1110 bin</td>
</tr>
<tr>
<td>02</td>
<td>Moment of inertia identification</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Re-calculates the speed controller parameters</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Speed controller optimization (vibration test)</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

### Description:
Sets the configuration of the rotating measurement.

### Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Saturation characteristic identification</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Moment of inertia identification</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Re-calculates the speed controller parameters</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Speed controller optimization (vibration test)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

### Dependency:
Refer to: F07988

### Note:
The following parameters are influenced for the individual optimization steps:
- Bit 01: p0320, p0360, p0362 ... p0369
- Bit 02: p0341, p0342
- Bit 03: p1400.0, p1458, p1459, p1463, p1470, p1472, p1496
- Bit 04: Dependent on p1960

### p1960 Rotating measurement selection / Rot meas sel

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

### Description:
Sets the rotating measurement.

- The rotating measurement is carried out after the next power-on command.
- The setting possibilities of the parameter depend on the open-loop/closed-loop control mode (p1300).
  - p1300 < 20 (U/f open-loop control):
    - It is not possible to select rotating measurement or speed controller optimization.
- p1300 = 20, 22 (encoderless operation):
  - Only rotating measurement or speed controller optimization can be selected in the encoderless mode.

### Value:
0: Inhibited
1: Rotating measurement in encoderless operation
3: Speed controller optimization in encoderless operation

### Dependency:
Before the rotating measurement is carried out, the motor data identification routine (p1900, p1910, r3925) should have already been done.

When selecting the rotating measurement, the drive data set changeover is suppressed.

Refer to: p1300, p1900, p1959

### Danger:
For drives with a mechanical system that limits the distance moved, it must be ensured that this is not reached during the rotating measurement. If this is not the case, then it is not permissible that the measurement is carried out.

### Notice:
If there is a motor holding brake, it must be open (p1215 = 2).
To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971).

### Note:
When the rotating measurement is activated, it is not possible to save the parameters (p0971).
Parameter changes are automatically made for the rotating measurement (e.g. p1120); this is the reason that up to the end of the measurement, and if no faults are present, no manual changes should be made.

The ramp-up and ramp-down times (p1120, p1121) are limited, for the rotating measurement, to 900 s.
### p1961 Saturation characteristic speed to determine / Sat_char n determ

| Access level: 3 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: U, T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |
| **Min** | **Max** | **Factory setting** |
| 26 [%] | 75 [%] | 40 [%] |

**Description:** Sets the speed to determine the saturation characteristic.

The percentage value is referred to p0310 (rated motor frequency).

**Dependency:**
- Refer to: p0310, p1959
- Refer to: F07983

**Note:** The saturation characteristics should be determined at an operating point with the lowest possible load.

### p1965 Speed_ctrl_opt speed / n_opt speed

| Access level: 3 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: U, T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |
| **Min** | **Max** | **Factory setting** |
| 10 [%] | 75 [%] | 40 [%] |

**Description:** Sets the speed for the identification of the moment of inertia and the vibration test.

- **Induction motor:**
  - The percentage value is referred to p0310 (rated motor frequency).
- **Synchronous motor:**
  - The percentage value is referred to the minimum from p0310 (rated motor frequency) and p1082 (maximum speed).

**Dependency:**
- Refer to: p0310, p1959
- Refer to: F07984, F07985

**Note:** In order to calculate the inertia, sudden speed changes are carried out - the specified value corresponds to the lower speed setpoint. This value is increased by 20 % for the upper speed value. The q leakage inductance (refer to p1959 bit 5) is determined at zero speed and at 50% of p1965 - however, with a maximum output frequency of 15 Hz and at a minimum of 10% of the rated motor speed.

### p1967 Speed_ctrl_opt dynamic factor / n_opt dyn_factor

| Access level: 3 | Calculated: p0340 = 1 | Data type: FloatingPoint32 |
| Can be changed: U, T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |
| **Min** | **Max** | **Factory setting** |
| 1 [%] | 400 [%] | 100 [%] |

**Description:** Sets the dynamic response factor for speed controller optimization.

**Dependency:**
- For power units with a reduced DC link capacitance (e.g., PM250), the dynamic response of the controller is set to 40%.
- Refer to: p1959
- Refer to: F07985

**Note:**
- For a rotating measurement, this parameter can be used to optimize the speed controller.
  - p1967 = 100 % → speed controller optimization according to a symmetric optimum.
  - p1967 > 100 % → optimization with a higher dynamic response (Kp higher, Tn lower).
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1968</td>
<td><strong>Speed_ctrl_opt dynamic factor actual / n_opt dyn_fact act</strong></td>
<td>Refer to: p1959, p1967</td>
<td>This dynamic factor only refers to the control mode of the speed controller set in p1960.</td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td></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></td>
<td><strong>Description:</strong> Displays the dynamic factor which is actually achieved for the vibration test</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r1969</td>
<td><strong>Speed_ctrl_opt moment of inertia determined / n_opt M_inert det</strong></td>
<td>Refer to: p0341, p0342, p1959</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access level: 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Units group: 25_1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>- [kgm²]</td>
<td>- [kgm²]</td>
<td>- [kgm²]</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Displays the determined moment of inertia of the drive.</td>
<td>After it has been determined, the value is transferred to p0341, p0342.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IEC drives (p0100 = 0): unit kg m²</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NEMA drives (p0100 = 1): unit lb ft²</td>
<td></td>
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</tr>
<tr>
<td>r1970[0...1]</td>
<td><strong>Speed_ctrl_opt vibration test vibration frequency determined / n_opt f_vibration</strong></td>
<td>Refer to: p1959</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access level: 4</td>
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<tr>
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<td></td>
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<td>Units group: -</td>
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<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>- [Hz]</td>
<td>- [Hz]</td>
<td>- [Hz]</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Displays the vibration frequencies determined by the vibration test.</td>
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</tr>
<tr>
<td></td>
<td><strong>Index:</strong> [0] = Frequency low</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[1] = Frequency high</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p1980[0...n]</td>
<td><strong>PoliID technique / PoliID technique</strong></td>
<td>Refer to: p1780</td>
<td>Voltage pulse technique (p1980 = 1, 4) cannot be applied to operation with sine-wave output filters (p0230).</td>
</tr>
<tr>
<td></td>
<td>Access level: 4</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>10</td>
<td>4</td>
</tr>
</tbody>
</table>
**r1984**  
**PolID angular difference / PolID ang diff**

<table>
<thead>
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<th>Access level:</th>
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<th>-</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
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<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
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<td>Units group:</td>
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<td>Unit selection:</td>
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<td></td>
<td></td>
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<tr>
<td>Min</td>
<td>- ['']</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Max</td>
<td>- ['']</td>
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</tbody>
</table>

**Description:** Displays the angular difference between the actual electrical commutation angle and the angle determined by the pole position identification.

**Dependency:** Refer to: p0325, p0329, p1980, r1985, r1987

**Note:** When the pole position identification routine is executed several times, the spread of the measured values can be determined using this value. At the same position, the spread should be less than 2 degrees electrical.

---

**r1985**  
**PolID saturation curve / PolID sat_char**

<table>
<thead>
<tr>
<th>Access level:</th>
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<th>Data type:</th>
<th>FloatingPoint32</th>
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<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [Arms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Max</td>
<td>- [Arms]</td>
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</tbody>
</table>

**Description:** Displays the saturation characteristic of the pole position identification routine (saturation technique). Displays the current characteristic of the pole position identification routine (elasticity technique).

**Dependency:** Refer to: p0325, p0329, p1980, r1984, r1987

**Note:** PolID: Pole position identification

Regarding the saturation technique:
The values for the characteristic of the last saturation-based pole position identification routine are output every 1 ms in order to record signals (e.g. trace).

---

**r1987**  
**PolID trigger characteristic / PolID trig_char**

<table>
<thead>
<tr>
<th>Access level:</th>
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<th>FloatingPoint32</th>
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<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [%]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>- [%]</td>
<td></td>
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</tbody>
</table>

**Description:** Displays the trigger characteristic of the pole position identification routine.
The values for the characteristic of the last pole position identification routine are output every 1 ms in order to record signals (e.g. trace).
The values for trigger characteristic and saturation characteristic are always output in synchronism from a time perspective.

**Dependency:** Refer to: p0325, p0329, p1980, r1984, r1985

**Note:** PolID: Pole position identification

The following information and data can be taken from the trigger characteristic.
- the value -100% marks the angle at the start of the measurement.
- the value +100 % marks the commutation angle determined from the pole position identification routine.

---

**p1999[0...n]**  
**Ang. commutation offset calib. and PollID scaling / Com_ang_offs scal**

<table>
<thead>
<tr>
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<th>4</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
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</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>MDS</td>
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<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>10 [%]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>5000 [%]</td>
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</tr>
</tbody>
</table>

**Description:** Sets the scaling for the runtime of the pole position identification technique in which the current is injected.

**Dependency:** Refer to: p0341, p0342
### Caution:
For p1999 > 100 % (setting large moments of inertia) the following applies:
There is no locked rotor monitoring (F07970 fault value 2).

### Note:
For high moments of inertia, it is practical to scale the runtime of the calibration higher.

#### p2000  Reference speed reference frequency / \( n_{\text{ref}} f_{\text{ref}} \)

| Access level: | 2 |
| Can be changed: | T |
| Units group: | - |

**Description:**
Sets the reference quantity for speed and frequency.

All speeds or frequencies specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
The following applies: Reference frequency (in Hz) = reference speed (in \((\text{rpm}) / 60\times \text{pole pair number}\))

**Dependency:**
This parameter is only updated during the automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.


**Notice:**
When the reference speed / reference frequency is changed, short-term communication interruptions may occur.

**Note:**
If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

**Example 1:**
The signal of an analog input (e.g. r0755[0]) is connected to a speed setpoint (e.g. p1070[0]). The actual percentage input value is cyclically converted into the absolute speed setpoint using the reference speed (p2000).

**Example 2:**
The setpoint from PROFIBUS (r2050[1]) is connected to a speed setpoint (e.g. p1070[0]). The actual input value is cyclically converted into a percentage value via the pre-specified scaling 4000 hex. This percentage value is converted to the absolute speed setpoint via reference speed (p2000).

#### p2001  Reference voltage / Reference voltage

| Access level: | 3 |
| Can be changed: | T |
| Units group: | - |

**Description:**
Sets the reference quantity for voltages.

All voltages specified as relative value are referred to this reference quantity. This also applies for direct voltage values (= rms value) like the DC-link voltage.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

**Note:**
This reference quantity also applies to direct voltage values. It is not interpreted as rms value, but as DC voltage value.

**Dependency:**
p2001 is only updated during automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning has been carried out first for drive data set zero and as a result overwriting of the parameter has not been blocked by setting p0573 = 1.

Refer to: r3996

**Notice:**
When the reference voltage is changed, short-term communication interruptions may occur.

**Note:**
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.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2002</td>
<td>Reference current / I_ref</td>
<td>0.10 [Arms]</td>
<td>100000.00 [Arms]</td>
<td>100.00 [Arms]</td>
</tr>
<tr>
<td>p2003</td>
<td>Reference torque / M_ref</td>
<td>0.01 [Nm]</td>
<td>2000000.00 [Nm]</td>
<td>1.00 [Nm]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the reference quantity for currents.
All currents specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

**Dependency:**
This parameter is only updated during the automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.
Refer to: r3996

**Notice:**
If various DDS are used with different motor data, then the reference quantities remain the same as these are not changed over with the DDS. The resulting conversion factor must be taken into account.
Example:
p2002 = 100 A
Reference quantity 100 A corresponds to 100 %
p0305[0] = 100 A
Rated motor current 100 A for MDS0 in DDS0 --> 100 % corresponds to 100 % of the rated motor current
p0305[1] = 50 A
Rated motor current 50 A for MDS1 in DDS1 --> 100 % corresponds to 200 % of the rated motor current
When the reference current is changed, short-term communication interruptions may occur.

**Note:**
If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.
For infeed units, the rated line current, which is obtained from the rated power and parameterized rated line supply voltage (p2002 = r0206 / p0210 / 1.73) is pre-assigned as the reference quantity.
Example:
The actual value of a phase current (r0069[0]) is connected to a test socket (e.g. p0771[0]). The actual current value is cyclically converted into a percentage of the reference current (p2002) and output according to the parameterized scaling.

---

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.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2002</td>
<td>Reference current / I_ref</td>
<td>0.10 [Arms]</td>
<td>100000.00 [Arms]</td>
<td>100.00 [Arms]</td>
</tr>
<tr>
<td>p2003</td>
<td>Reference torque / M_ref</td>
<td>0.01 [Nm]</td>
<td>2000000.00 [Nm]</td>
<td>1.00 [Nm]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the reference quantity for torque.
All torques specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

**Dependency:**
This parameter is only updated during the automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.
Refer to: r3996

**Notice:**
When the reference torque is changed, short-term communication interruptions may occur.
### Parameters

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
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</thead>
<tbody>
<tr>
<td><strong>r2004</strong></td>
<td><strong>Reference power / P_ref</strong></td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>14_10</td>
<td>p0505</td>
<td>[- [kW]]</td>
<td>[kW]</td>
<td>- [kW]</td>
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<td>Displays the reference quantity for power.</td>
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<td>All power ratings specified as relative value are referred to this reference quantity.</td>
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<tr>
<td></td>
<td>The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).</td>
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<tr>
<td></td>
<td>This value is calculated as follows:</td>
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<tr>
<td></td>
<td>- Infeed: Calculated from voltage times current.</td>
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<tr>
<td></td>
<td>- Closed-loop control: Calculated from torque times speed.</td>
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<td><strong>Note:</strong></td>
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<tr>
<td></td>
<td>If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.</td>
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<td>The reference power is calculated as follows:</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>- (2 \times \pi \times \text{reference speed} / 60 \times \text{reference torque (motor)})</td>
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<td></td>
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<tr>
<td></td>
<td>- (\text{reference voltage} \times \text{reference current} \times \sqrt{3}) (infeed)</td>
<td></td>
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<tr>
<td><strong>p2005</strong></td>
<td><strong>Reference angle / Reference angle</strong></td>
<td>4</td>
<td>T</td>
<td>p0340 = 1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>90.00 [*]</td>
<td>180.00 [*]</td>
<td>90.00 [*]</td>
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<td>Sets the reference quantity for angle.</td>
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<tr>
<td></td>
<td>All angles specified as relative value are referred to this reference quantity.</td>
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<tr>
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<td>The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).</td>
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<td><strong>Dependency:</strong></td>
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<td></td>
<td>This parameter is only updated during the automatic calculation (p0340 = 1, p3900 &gt; 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.</td>
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<td></td>
<td><strong>Note:</strong></td>
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<tr>
<td></td>
<td>If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.</td>
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</tr>
<tr>
<td><strong>p2006</strong></td>
<td><strong>Reference temp / Ref temp</strong></td>
<td>3</td>
<td>T</td>
<td>p0340 = 1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>50.00 [°C]</td>
<td>300.00 [°C]</td>
<td>100.00 [°C]</td>
</tr>
<tr>
<td></td>
<td>Sets the reference quantity for temperature.</td>
<td></td>
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<tr>
<td></td>
<td>All temperatures specified as relative value are referred to this reference quantity.</td>
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<tr>
<td></td>
<td>The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).</td>
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### p2007 Reference acceleration / a_ref

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
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<th>p0340 = 1</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
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</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.01 [rev/s²]</td>
<td>500000.00 [rev/s²]</td>
<td>0.01 [rev/s²]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the reference quantity for acceleration rates.

All acceleration rates specified as relative value are referred to this reference quantity.

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

**Dependency:**
This parameter is only updated during the automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.

**Note:**
If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

The reference acceleration is calculated as follows:

\[ p2007 = p2000 / 1 \text{ [s]} \]

### p2010 Comm interface baud rate / Comm baud

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the baud rate for the commissioning interface (USS, RS232).

**Value:**
4: 2400 baud
5: 4800 baud
6: 9600 baud
7: 19200 baud
8: 38400 baud
9: 57600 baud
10: 76800 baud
11: 93750 baud
12: 115200 baud

**Note:**
Commissioning interface

The parameter is not influenced by setting the factory setting.

### p2011 Comm int address / Comm add

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>31</td>
<td>2</td>
</tr>
</tbody>
</table>

**Description:**
Sets the address for the commissioning interface (USS, RS232).

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

### p2016[0...3] CI: Comm IF USS PZD send word / Comm USS send word

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>U32 / Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>4000H</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Selects the PZD (actual values) to be sent via the commissioning interface USS.
Parameters

Parameter list

The actual values are displayed on an intelligent operator panel (IOP).

<table>
<thead>
<tr>
<th>Index</th>
<th>Meaning</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>
</tbody>
</table>

**r2019[0...7]**

Comm int error statistics / Comm err

<table>
<thead>
<tr>
<th>Access level: 4</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the receive errors at the commissioning interface (USS, RS232).

<table>
<thead>
<tr>
<th>Index</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>Number of error-free telegrams</td>
</tr>
<tr>
<td>[1]</td>
<td>Number of rejected telegrams</td>
</tr>
<tr>
<td>[2]</td>
<td>Number of framing 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 starting character errors</td>
</tr>
<tr>
<td>[6]</td>
<td>Number of checksum errors</td>
</tr>
<tr>
<td>[7]</td>
<td>Number of length errors</td>
</tr>
</tbody>
</table>

**p2020**

Field bus interface baud rate / Field bus baud

<table>
<thead>
<tr>
<th>CU240B-2</th>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2</td>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the baud rate for the field bus interface (RS485).

**Value:**

- 4: 2400 baud
- 5: 4800 baud
- 6: 9600 baud
- 7: 19200 baud
- 8: 38400 baud
- 9: 57600 baud
- 10: 76800 baud
- 11: 93750 baud
- 12: 115200 baud
- 13: 187500 baud

**Notice:**

For p0014 = 1, 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.

For p0014 = 0, the following applies:

Before a changed setting becomes permanently effective, a non-volatile RAM to ROM data save is required. To do this, set p0971 = 1 or p0014 = 1.

**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.

When p2030 = 1 (USS), the following applies:

Min./max./factory setting: 4/13/8

When p2030 = 2 (MODBUS), the following applies:

Min./max./factory setting: 5/13/7
**p2021**  
**Field bus interface address / Field bus address**

CU240B-2  
CU240E-2  
CU240E-2_F

**Access level:** 2  
**Calculated:** -  
**Data type:** Unsigned16

**Can be changed:** T  
**Scaling:** -  
**Data set:** -

**Units group:** -  
**Unit selection:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>247</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Displays or sets the address for the fieldbus interface (RS485).

The address can be set as follows:
1) Using the address switch on the Control Unit.
   --> p2021 displays the address setting.
   --> A change only becomes effective after a POWER ON.
2) Using p2021
   --> Only if an address of 0 or an address which is invalid for the fieldbus selected in p2030 has been set using the address switch.
   --> The address is saved in a non-volatile fashion using the function "copy from RAM to ROM".
   --> A change only becomes effective after a POWER ON.

**Dependency:** Refer to: p2030

**Notice:** For p0014 = 1, 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.
For p0014 = 0, the following applies:
Before a changed setting becomes permanently effective, a non-volatile RAM to ROM data save is required. To do this, set p0971 = 1 or p0014 = 1.

**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.
When p2030 = 1 (USS), the following applies:
Min./max./factory setting: 0/30/0
When p2030 = 2 (MODBUS), the following applies:
Min./max./factory setting: 1/247/1

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

CU240B-2  
CU240E-2  
CU240E-2_F

**Access level:** 2  
**Calculated:** -  
**Data type:** Unsigned16

**Can be changed:** T  
**Scaling:** -  
**Data set:** -

**Units group:** -  
**Unit selection:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>8</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 fieldbus 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**

CU240B-2  
CU240E-2  
CU240E-2_F

**Access level:** 2  
**Calculated:** -  
**Data type:** Integer16

**Can be changed:** T  
**Scaling:** -  
**Data set:** -

**Units group:** -  
**Unit selection:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>127</td>
<td>127</td>
</tr>
</tbody>
</table>

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

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

**Parameter list**

**Dependency:**
Refer to: p2030

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

<table>
<thead>
<tr>
<th>p2024[0...2]</th>
<th>Fieldbus interface times / Fieldbus times</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240B-2</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>CU240E-2</td>
<td>Units group: -</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>Unit selection: -</td>
</tr>
</tbody>
</table>

**Index:**

- [0] = Max. processing time
- [1] = Character delay time
- [2] = Telegram pause time

**Description:**
Sets the time values for the fieldbus interface.

- The following applies for MODBUS:
  - p2024[0]: Maximum permissible telegram processing time of the MODBUS slave in which a reply is sent back to the MODBUS master.
  - p2024[1]: Character delay time (time between individual characters in the telegram).
  - p2024[2]: Telegram pause time (pause time between two telegrams).

**Dependency:**
Refer to: p2020, p2030

**Note:**
Re p2024[1,2] (MODBUS):
- If the field bus baud rate is changed (p2020), the default time settings are restored.
- The default setting is the time required for 1.5 characters (p2024[1]) or 3.5 characters (p2024[2]) (depending on the set baud rate).

<table>
<thead>
<tr>
<th>r2029[0...7]</th>
<th>Field bus int error statistics / Field bus error</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240B-2</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>CU240E-2</td>
<td>Units group: -</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>Unit selection: -</td>
</tr>
</tbody>
</table>

**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

**Description:**
Displays the receive errors on the field bus interface (RS485).

<table>
<thead>
<tr>
<th>p2030</th>
<th>Field bus int protocol selection / Field bus protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240B-2_DP</td>
<td>Access level: 1</td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td>Units group: -</td>
</tr>
</tbody>
</table>

**Value:**

- 0: No protocol
- 3: PROFIBUS

**Notice:**
For p0014 = 1, 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: Changes only become effective after POWER ON.
The parameter is not influenced by setting the factory setting.

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CU240B-2</th>
<th>CU240E-2</th>
<th>CU240E-2_E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>1</td>
<td>Calculated: -</td>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

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

**Value:**
0: No protocol
1: USS
2: MODBUS

**Notice:**
For p0014 = 1, 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:** Changes only become effective after POWER ON.
The parameter is not influenced by setting the factory setting.

**r2032** Master control, control word effective / PcCtrl STW eff

<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>ON/OFF1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>OC / OFF2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>OC / OFF3</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Operation enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Ramp-function generator enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Start ramp-function generator</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Speed setpoint enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Acknowledge fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Jog bit 0</td>
<td>Yes</td>
<td>No</td>
<td>3030</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Jog bit 1</td>
<td>Yes</td>
<td>No</td>
<td>3030</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Master ctrl by PLC</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Displays the effective control word 1 (STW1) of the drive for the master control.
### Notice:
The master control only influences control word 1 and speed setpoint 1. Other control words/setpoints can be transferred from another automation device.

**Note:**
OC: Operating condition

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2037</td>
<td>PROFIdrive STW1.10 = 0 mode / PD STW1.10=0</td>
<td></td>
<td></td>
<td>If the STW1 is not transferred according to the PROFIdrive with PZD1 (with bit 10 &quot;master control by PLC&quot;), then p2037 should be set to 2.</td>
</tr>
<tr>
<td>p2038</td>
<td>PROFIdrive STW/ZSW interface mode / PD STW/ZSW IF mode</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p2039</td>
<td>Select debug monitor interface / Debug monit select</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2037</td>
<td>3</td>
<td>-</td>
<td>T</td>
<td>-</td>
<td>Integer16</td>
<td>-</td>
</tr>
<tr>
<td>p2038</td>
<td>3</td>
<td>-</td>
<td>T</td>
<td>-</td>
<td>Integer16</td>
<td>-</td>
</tr>
<tr>
<td>p2039</td>
<td>4</td>
<td>-</td>
<td>U, T</td>
<td>-</td>
<td>Unsigned16</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2037</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>p2038</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>p2039</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the processing mode for PROFIdrive STW1.10 "master control by PLC".
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.

**Value:**
0: Freeze setpoints and continue to process sign-of-life
1: Freeze setpoints and sign-of-life
2: Do not freeze setpoints

**Dependency:**
Refer to: p0922, p2079

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

- For p0922 (p2079) = 1, 350 ... 999, p2038 is automatically set to 0.
- For p0922 (p2079) = 20, p2038 is automatically set to 2.
It is not then possible to change p2038.

**Description:**
Sets the interface mode of the PROFIdrive control words and status words.
When selecting a telegram via p0922 (p2079), this parameter influences the device-specific assignment of the bits in the control and status words.

**Value:**
0: SINAMICS
2: VIK-NAMUR

**Dependency:**
Refer to: p0922, p2079

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

**Note:**
- For p0922 (p2079) = 1, 350 ... 999, p2038 is automatically set to 0.
- For p0922 (p2079) = 20, p2038 is automatically set to 2.
It is not then possible to change p2038.

**Description:**
The serial interface for the debug monitor is COM1 (commissioning interface, RS232) or COM2 (fieldbus interface, RS485).

**Value:**
0: De-activated
1: COM1, commissioning protocol is de-activated
2: COM2, field bus is de-activated
3: Reserved

**Note:**
Value = 2 is only possible for Control Units with RS485 as a field bus interface.
### p2040  Fieldbus interface monitoring time / Fieldbus t_monit

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240B-2</td>
<td>Sets the monitoring time to monitor the process data received via the fieldbus interface. If no process data is received within this time, an appropriate message is output.</td>
<td>Refer to: F01910</td>
<td>0: The monitoring is de-activated.</td>
</tr>
<tr>
<td>CU240E-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Parameters

- **Access level**: 3
- **Can be changed**: U, T
- **Units group**: -
- **Calculation**: -
- **Scaling**: -
- **Data set**: -
- **Min**: 0 [ms]
- **Max**: 1999999 [ms]
- **Factory setting**: 100 [ms]

### p2042  PROFIBUS Ident Number / PB Ident No.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240B-2_DP</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>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Parameters

- **Access level**: 3
- **Can be changed**: T
- **Units group**: -
- **Calculation**: -
- **Scaling**: -
- **Data set**: -
- **Min**: 0
- **Max**: 1
- **Factory setting**: 0

### r2043.0...2  BO: PROFIdrive PZD state / PD PZD state

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240B-2_DP</td>
<td>Displays the PROFIdrive PZD state.</td>
<td>Refer to: p2044</td>
<td>When using the &quot;setpoint failure&quot; signal, the bus can be monitored and an application-specific response triggered when the setpoint fails.</td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Parameters

- **Access level**: 3
- **Can be changed**: -
- **Units group**: -
- **Calculation**: -
- **Scaling**: -
- **Data set**: -
- **Min**: -
- **Max**: -
- **Factory setting**: -

#### 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 failure</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Fieldbus oper</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
**Parameters**

**Parameter list**

---

### p2044  
**PROFIdrive fault delay / PD fault delay**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU240B-2_DP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CU240E-2_DP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CU240E-2_DP_F</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CU240E-2_PN_F</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CU240E-2 PN</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Can be changed: U, T
- Units group: -
- Unit selection: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 [s]</td>
<td>100 [s]</td>
<td>0 [s]</td>
</tr>
</tbody>
</table>

**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
- Refer to: F01910

### p2047  
**PROFIBUS additional monitoring time / PB suppl t_monit**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU240B-2_DP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CU240E-2_DP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CU240E-2_DP_F</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Can be changed: U, T
- Units group: -
- Unit selection: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 [ms]</td>
<td>20000 [ms]</td>
<td>0 [ms]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the additional monitoring time to monitor the process data received via PROFIBUS. The additional monitoring time enables short bus faults to be compensated. If no process data is received within this time, an appropriate message is output.

**Dependency:**
- Refer to: F01910

**Note:**
For controller STOP, the additional monitoring time is not effective.

### r2050[0...11]  
**CO: PROFIBUS PZD receive word / PZD recv word**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU240B-2_DP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CU240E-2_DP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CU240E-2_DP_F</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Can be changed: -
- Units group: -
- Unit selection: -

<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:**
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
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10
- [10] = PZD 11
### p2051[0...11]

**CI: PROFldrive PZD send word / PZD send word**

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2051</td>
<td>Selects the PZD (actual values) with word format to be sent to the fieldbus controller.</td>
<td></td>
<td>The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
</tr>
</tbody>
</table>

**CU240B-2_DP**

**Access level:** 3

**Calculated:** -

**Data type:** U32 / Integer16

**Can be changed:** U, T

**Scaling:** 4000H

**Data set:** -

**Units group:** -

**Unit selection:** -

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

**Factory setting**

[0] 2089

[1] 63

[2...11] 0

**r2053[0...11]**

**PROFldrive diagnostics send PZD word / Diag send word**

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2053</td>
<td>Displays the PZD (actual values) with word format sent to the fieldbus controller.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CU240B-2**

**Access level:** 3

**Calculated:** -

**Data type:** Unsigned16

**Can be changed:** -

**Scaling:** -

**Data set:** -

**Units group:** -

**Unit selection:** -

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

**Factory setting**

- -
### Parameters

#### Parameter list

**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

**r2054**  
**PROFIBUS status / PB status**

<table>
<thead>
<tr>
<th>CU240B-2_DP</th>
<th>CU240E-2_DP</th>
<th>CU240E-2_DP_F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Status display for the PROFIBUS interface.

**Value:**

- 0: OFF
- 1: No connection (search for baud rate)
- 2: Connection OK (baud rate found)
- 3: Cyclic connection with master (data exchange)
- 4: Cyclic data OK

**r2055[0...2]**  
**PROFIBUS diagnostics standard / PB diag standard**

<table>
<thead>
<tr>
<th>CU240B-2_DP</th>
<th>CU240E-2_DP</th>
<th>CU240E-2_DP_F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Diagnostics display for the PROFIBUS interface.

**Index:**

- [0] = Master bus address
- [1] = Master input total length bytes
- [2] = Master output total length bytes
### r2057
**PROFIBUS address switch diagnostics / PB addr_sw diag**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240B-2_DP</td>
<td>Displays the setting of the PROFIBUS address switch &quot;DP ADDRESS&quot; on the Control Unit.</td>
<td>3</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Index:**
- [0] = PZD 1 + 2
- [1] = PZD 2 + 3
- [2] = PZD 3 + 4
- [3] = PZD 4 + 5
- [4] = PZD 5 + 6
- [5] = PZD 6 + 7
- [6] = PZD 7 + 8
- [7] = PZD 8 + 9
- [8] = PZD 9 + 10
- [9] = PZD 10 + 11
- [10] = PZD 11 + 12

**Dependency:**
Refer to: p0918

**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.

### r2060[0...10]
**CO: PROFIdrive PZD receive double word / PZD recv DW**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0...10]</td>
<td>Connector output to interconnect PZD (setpoints) with double word format received from the fieldbus controller.</td>
<td>3</td>
<td>-</td>
<td>Integer32</td>
</tr>
</tbody>
</table>

**Index:**
- [0] = PZD 1 + 2
- [1] = PZD 2 + 3
- [2] = PZD 3 + 4
- [3] = PZD 4 + 5
- [4] = PZD 5 + 6
- [5] = PZD 6 + 7
- [6] = PZD 7 + 8
- [7] = PZD 8 + 9
- [8] = PZD 9 + 10
- [9] = PZD 10 + 11
- [10] = PZD 11 + 12

**Dependency:**
Refer to: 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.

### p2061[0...10]
**CI: PROFIBUS PZD send double word / PZD send DW**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0...10]</td>
<td>Selects the PZD (actual values) with double word format to be sent to the fieldbus controller.</td>
<td>3</td>
<td>-</td>
<td>U32 / Integer32</td>
</tr>
</tbody>
</table>

**Index:**
- [0] = PZD 1 + 2
- [1] = PZD 2 + 3
- [2] = PZD 3 + 4
- [3] = PZD 4 + 5
- [4] = PZD 5 + 6
- [5] = PZD 6 + 7
- [6] = PZD 7 + 8
- [7] = PZD 8 + 9
- [8] = PZD 9 + 10
- [9] = PZD 10 + 11
- [10] = PZD 11 + 12

**Dependency:**
Refer to: p2051

**Notice:**
A BICO interconnection for a single PZD can only take place either on r2051 or r2061.

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

**Parameter list**

---

**r2063[0...10]**  
**PROFIdrive diagnostics PZD send double word / Diag send DW**

- **Access level:** 3  
- **Calculated:** -  
- **Data type:** Unsigned32  
- **Can be changed:** -  
- **Scaling:** -  
- **Data set:** -  
- **Units group:** -  
- **Unit selection:** -

**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

**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>
</tr>
<tr>
<td>19</td>
<td>Bit 19</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<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>
</tbody>
</table>

**Notice:** A maximum of 4 indices of the "trace" function can be used.
### Parameter List

#### r2067[0...1] PZD maximum interconnected / PZDmaxIntercon

| Access level: 3 | Calculated: - | Data type: Unsigned16 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |
| Min | Max | Factory setting |

**Description:** Display for the maximum interconnected PZD in the receive/send direction

- Index 0: receive (r2050, r2060)
- Index 1: send (p2051, p2061)

#### r2074[0...11] PROFIdrive diagnostics bus address PZD receive / Diag addr recv

| CU240B-2_DP | Access level: 3 | Calculated: - | Data type: Unsigned16 |
| CU240E-2_DP | Can be changed: - | Scaling: - | Data set: - |
| CU240E-2_DP_F | Units group: - | Unit selection: - |
| Min | Max | Factory setting |

**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

**Note:**
- Value range:
  - 0 - 125: Bus address of the sender
  - 65535: not assigned

#### r2075[0...11] PROFIdrive diagnostics telegram offset PZD receive / Diag offs recv

| CU240B-2_DP | Access level: 3 | Calculated: - | Data type: Unsigned16 |
| CU240E-2_DP | Can be changed: - | Scaling: - | Data set: - |
| CU240E-2_DP_F | Units group: - | Unit selection: - |
| Min | Max | Factory setting |

**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
  - [4] = PZD 5
  - [5] = PZD 6
  - [6] = PZD 7
  - [7] = PZD 8
  - [8] = PZD 9
  - [9] = PZD 10
  - [10] = PZD 11
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2076[0...11]</td>
<td>PROFIdrive diagnostics telegram offset PZD send / Diag offs send</td>
<td></td>
<td>Value range: 0 - 242: Byte offset 65535: not assigned</td>
</tr>
<tr>
<td>CU240B-2_DP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Unsigned16</td>
<td></td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</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>
<tr>
<td>0</td>
<td>242</td>
<td>65535: not assigned</td>
<td></td>
</tr>
</tbody>
</table>

#### Description:
Displays the PZD byte offset in the PROFIdrive send telegram (controller input).

### r2077[0...15] | PROFIBUS diagnostics peer-to-peer data transfer addresses / PB diag peer addr | |
|CU240B-2_DP|CU240E-2_DP|CU240E-2_DP_F|CU240E-2_PN_F|CU240E-2 PN|
|Access level: 3|Can be changed: -|Units group: -|
|Calculated: -|Scaling: -|Unit selection: -|
|Min|Max|Factory setting|
|0|242|65535: not assigned|

#### Description:
Displays the addresses of the slaves (peers) where peer-to-peer data transfer has been configured via PROFIBUS.

### p2079 | PROFIdrive PZD telegram selection extended / PD PZD tel ext | |
|CU240B-2_DP|CU240E-2_DP|CU240E-2_DP_F|CU240E-2_PN_F|CU240E-2 PN|
|Access level: 3|Can be changed: T|Units group: -|
|Calculated: -|Scaling: -|Unit selection: -|
|Min|Max|Factory setting|
|1|999|1|

#### Description:
Sets the send and receive telegram. Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.
Parameter list

Value:
1: Standard telegram 1, PZD-2/2
20: Standard telegram 20, PZD-2/6
350: SIEMENS telegram 350, PZD-4/4
352: SIEMENS telegram 352, PZD-6/6
353: SIEMENS telegram 353, PZD-2/2, PKW-4/4
354: SIEMENS telegram 354, PZD-6/6, PKW-4/4
999: Free telegram configuration with BICO

Dependency:
Refer to: p0922

Description:
Selects bits to be sent to the PROFIdrive controller.
The individual bits are combined to form status word 1.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency:
Refer to: p2088, r2089

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

p2080[0...15] BI: Binector-connector converter status word 1 / Bin/con ZSW1

CU240B-2_DP
CU240E-2_DP
CU240E-2_DP_F
CU240E-2_PN_F
CU240E-2 PN

Access level: 3
Can be changed: U, T
Units group: -

Dependency:
Refer to: p0922

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

#### Parameter list

<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><strong>CU240B-2</strong></td>
<td><strong>CU240E-2</strong></td>
</tr>
<tr>
<td><strong>CU240E-2_F</strong></td>
<td><strong>CU240F-2</strong></td>
</tr>
<tr>
<td><strong>Access level</strong>: 3</td>
<td><strong>Can be changed</strong>: U, T</td>
</tr>
<tr>
<td><strong>Data type</strong>: U32 / Binary</td>
<td><strong>Scaling</strong>: -</td>
</tr>
<tr>
<td><strong>Min</strong>: -</td>
<td><strong>Max</strong>: -</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
- [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.

<table>
<thead>
<tr>
<th>p2081[0...15]</th>
<th>BI: Binector-connector converter status word 2 / Bin/con ZSW2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU240B-2</strong></td>
<td><strong>CU240E-2</strong></td>
</tr>
<tr>
<td><strong>CU240E-2_F</strong></td>
<td><strong>CU240F-2</strong></td>
</tr>
<tr>
<td><strong>Access level</strong>: 3</td>
<td><strong>Can be changed</strong>: U, T</td>
</tr>
<tr>
<td><strong>Data type</strong>: U32 / Binary</td>
<td><strong>Scaling</strong>: -</td>
</tr>
<tr>
<td><strong>Min</strong>: -</td>
<td><strong>Max</strong>: -</td>
</tr>
</tbody>
</table>

**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.
Parameter list

### p2082[0..15]  
**BI: Binector-connector converter status word 3 / Bin/con ZSW3**

- **Access level:** 3  
- **Calculated:** -  
- **Can be changed:** U, T  
- **Scaling:** -  
- **Units group:** -  
- **Unit selection:** -  
- **Min:** -  
- **Max:** -  
- **Factory setting:** 0  

**Description:**  
Selects bits to be sent to the PROFIdrive controller. The individual bits are combined to form free status word 3.

**Index:**
- [0] = Bit 0
- [1] = Bit 1
- [2] = Bit 2
- [3] = Bit 3
- [4] = Bit 4
- [5] = Bit 5
- [6] = Bit 6
- [7] = Bit 7
- [8] = Bit 8
- [9] = Bit 9
- [10] = Bit 10
- [12] = Bit 12
- [13] = Bit 13
- [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**

- **Access level:** 3  
- **Calculated:** -  
- **Can be changed:** U, T  
- **Scaling:** -  
- **Units group:** -  
- **Unit selection:** -  
- **Min:** -  
- **Max:** -  
- **Factory setting:** 0  

**Description:**  
Selects bits to be sent to the PROFIdrive controller. The individual bits are combined to form free status word 4.

**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
### p2084[0...15]  
**BI: Binector-connector converter status word 5 / Bin/con ZSW5**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: U32 / Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Min** | **Max** | **Factory setting**
-- | -- | --
- | - | 0

**Description:**
Selects bits to be sent to the PROFIdrive controller. The individual bits are combined to form free status word 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

**Dependency:**
Refer to: p2088, r2089

### p2088[0...4]  
**Invert binector-connector converter status word / Bin/con ZSW inv**

<table>
<thead>
<tr>
<th>CU240B-2_DP</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP</td>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Min** | **Max** | **Factory setting**
-- | -- | --
- | - | [0] 1010 1000 0000 0000 bin
- | - | [1...4] 0000 0000 0000 0000 bin

**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>
<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>
</tbody>
</table>
Parameter list

Dependency:
Refer to: p2080, p2081, p2082, p2083, r2089

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: Bit Signal name 1 signal 0 signal FP
00 Bit 0 Inverted Not inverted -
01 Bit 1 Inverted Not inverted -
02 Bit 2 Inverted Not inverted -
03 Bit 3 Inverted Not inverted -
04 Bit 4 Inverted Not inverted -
05 Bit 5 Inverted Not inverted -
06 Bit 6 Inverted Not inverted -
07 Bit 7 Inverted Not inverted -
08 Bit 8 Inverted Not inverted -
09 Bit 9 Inverted Not inverted -
10 Bit 10 Inverted Not inverted -
11 Bit 11 Inverted Not inverted -
12 Bit 12 Inverted Not inverted -
13 Bit 13 Inverted Not inverted -
14 Bit 14 Inverted Not inverted -
15 Bit 15 Inverted Not inverted -

Dependency:
Refer to: p2080, p2081, p2082, p2083, r2089

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

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 -
### Parameter list

<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>
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<tr>
<td>08</td>
<td>Bit 8</td>
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<tr>
<td>09</td>
<td>Bit 9</td>
<td>ON</td>
<td>OFF</td>
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<tr>
<td>10</td>
<td>Bit 10</td>
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<td>11</td>
<td>Bit 11</td>
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<td>12</td>
<td>Bit 12</td>
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<td>13</td>
<td>Bit 13</td>
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</tr>
<tr>
<td>14</td>
<td>Bit 14</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Bit 15</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

### Description:
Binector output for bit-serial interconnection of PZD1 (normally control word 1) received from the PROFIdrive controller.

### Access level: 3  
**Calculated:** -  
**Data type:** Unsigned16  
**Can be changed:** -  
**Scaling:** -  
**Units group:** -  
**Unit selection:** -  
**Min** -  
**Max** -  
**Factory setting** -

### Dependency:
Refer to: p2051, p2080, p2081, p2082, p2083

**Note:**
r2089 together with p2080 to p2084 forms five binector-connector converters.

---

### Parameter list

<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>
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</tr>
<tr>
<td>08</td>
<td>Bit 8</td>
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<tr>
<td>09</td>
<td>Bit 9</td>
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</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Bit 11</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Bit 12</td>
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<tr>
<td>13</td>
<td>Bit 13</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

### Description:
Binector output for bit-serial interconnection of PZD2 received from the PROFIdrive controller.

### Access level: 3  
**Calculated:** -  
**Data type:** Unsigned16  
**Can be changed:** -  
**Scaling:** -  
**Units group:** -  
**Unit selection:** -  
**Min** -  
**Max** -  
**Factory setting** -
## Parameter list

### BO: PROFIdrive PZD3 receive bit-serial / PZD3 recv bitw

**Access level:** 3  
**Calculated:** -  
**Data type:** Unsigned16  
**Can be changed:** -  
**Scaling:** -  
**Units group:** -  
**Unit selection:** -  
**Min:** -  
**Max:** -  
**Factory setting:** -  

**Description:** Binector output for bit-serial interconnection of PZD3 received from the PROFIdrive controller.

<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>
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<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>
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<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
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<td>-</td>
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<tr>
<td>07</td>
<td>Bit 7</td>
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<td>-</td>
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<tr>
<td>08</td>
<td>Bit 8</td>
<td>ON</td>
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<td>09</td>
<td>Bit 9</td>
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<td>10</td>
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<tr>
<td>15</td>
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</tbody>
</table>

### BO: PROFIdrive PZD4 receive bit-serial / PZD4 recv bitw

**Access level:** 3  
**Calculated:** -  
**Data type:** Unsigned16  
**Can be changed:** -  
**Scaling:** -  
**Units group:** -  
**Unit selection:** -  

**Description:** Binector output for bit-serial interconnection of PZD4 (normally control word 2) received from the PROFIdrive controller.

<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>
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<tr>
<td>02</td>
<td>Bit 2</td>
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<tr>
<td>03</td>
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<td>04</td>
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<td>06</td>
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<td>07</td>
<td>Bit 7</td>
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<tr>
<td>08</td>
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<td>-</td>
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<tr>
<td>09</td>
<td>Bit 9</td>
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<td>10</td>
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<td>11</td>
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<td>12</td>
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</tr>
<tr>
<td>15</td>
<td>Bit 15</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2094.0...15</td>
<td>BO: Connector-binector converter binector output / Con/bin outp</td>
<td>Refer to: p2099[0].</td>
</tr>
<tr>
<td>r2095.0...15</td>
<td>BO: Connector-binector converter binector output / Con/bin outp</td>
<td>Refer to: p2099[1].</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>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
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<tr>
<td>01</td>
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</tr>
<tr>
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<td>Bit 15</td>
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<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>
**Parameter list**

**p2098[0...1]**  
**Description:** Setting to invert the individual binector outputs of the connector-binector converter.

Using p2098[0], the signals of CI: p2099[0] are influenced.

Using p2098[1], the signals of CI: p2099[1] are influenced.

<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>
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</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
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<td>02</td>
<td>Bit 2</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
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<tr>
<td>03</td>
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<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>
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</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>Inverted</td>
<td>Not inverted</td>
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<td></td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>Inverted</td>
<td>Not inverted</td>
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<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>
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<td>Bit 9</td>
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<td>14</td>
<td>Bit 14</td>
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<td>15</td>
<td>Bit 15</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r2094, r2095, p2099

**p2099[0...1]**  
**Description:** Sets the signal source for the connector-binector converter.

A PZD receive word can be selected as signal source. The signals are available to be serially passed-on (interconnection).

**Dependency:** Refer to: r2094, r2095

**Note:** From the signal source set via the connector input, the corresponding lower 16 bits are converted.
p2099[0...1] together with r2094.0...15 and r2095.0...15 forms two connector-binector converters:
Connector input p2099[0] to binector output in r2094.0...15
Connector input p2099[1] to binector output in r2095.0...15

**p2100[0...19]**  
**Description:** Selects the faults for which the fault response should be changed

**Dependency:** The fault is selected and the required response is set under the same index.

Refer to: p2101
**Notice:**

For the following cases, it is not possible to re-parameterize the fault response to a fault:
- if there is no existing fault number.
- the message type is not "fault" (F).

**Note:**

Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

### p2101[0...19] Setting the fault response / Fault response

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type: Integer16</th>
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</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>Max</td>
<td>6</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**
Sets the fault response for the selected fault.

**Value:**
0: NONE
1: OFF1
2: OFF2
3: OFF3
5: STOP2
6: Internal armature short-circuit / DC braking

**Dependency:**
The fault is selected and the required response is set under the same index.

**Note:**
Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

The fault response can only be changed for faults with the appropriate identification.

**Example:**
F12345 and fault response = NONE (OFF1, OFF2)

--> The fault response NONE can be changed to OFF1 or OFF2.

Re value = 1 (OFF1):
Braking along the ramp-function generator down ramp followed by a pulse inhibit.

Re value = 2 (OFF2):
Internal/external pulse inhibit.

Re value = 3 (OFF3):
Braking along the OFF3 down ramp followed by a pulse inhibit.

Re value = 5 (STOP2):
n_set = 0

Re value = 6 (internal armature short-circuit, internal/DC braking):
This value can only be set for all drive data sets when p1231 = 4.

a) DC braking is not possible for synchronous motors.

b) DC braking is possible for induction motors.

### p2103[0...n] BI: 1. Acknowledge faults / 1. Acknowledge

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type: U32 / Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: CDS, p0170</td>
</tr>
<tr>
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<td>Unit selection:</td>
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<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>-</td>
<td>Factory setting</td>
</tr>
</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.
### Parameter List

**p2103[0...n]**  
**BI: 1. Acknowledge faults / 1. Acknowledge**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CU240B-2</th>
<th>CU240E-2</th>
<th>CU240E-2_F</th>
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</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
</tr>
</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.

---

**p2104[0...n]**  
**BI: 2. Acknowledge faults / 2. Acknowledge**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CU240B-2_DP</th>
<th>CU240E-2_DP</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
<tbody>
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<td></td>
<td></td>
</tr>
<tr>
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<tr>
<td>Units group</td>
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<td>-</td>
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<td>Min</td>
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<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the second signal source to acknowledge faults.

**Note:** A fault acknowledgement is triggered with a 0/1 signal.

---

**p2104[0...n]**  
**BI: 2. Acknowledge faults / 2. Acknowledge**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CU240B-2</th>
<th>CU240E-2</th>
<th>CU240E-2_F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed</td>
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<td>Units group</td>
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</tr>
<tr>
<td>Factory setting</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the second signal source to acknowledge faults.

**Note:** A fault acknowledgement is triggered with a 0/1 signal.

---

**p2105[0...n]**  
**BI: 3. Acknowledge faults / 3. Acknowledge**

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>Access level</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
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<tr>
<td>Max</td>
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<td></td>
</tr>
<tr>
<td>Factory setting</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the third signal source to acknowledge faults.

**Note:** A fault acknowledgement is triggered with a 0/1 signal.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2106[0...n] BI: External fault 1 / External fault 1</td>
<td>Sets the signal source for external fault 1.</td>
<td>Refer to: F07860</td>
<td>An external fault is triggered with a 1/0 signal.</td>
</tr>
<tr>
<td>p2107[0...n] BI: External fault 2 / External fault 2</td>
<td>Sets the signal source for external fault 2.</td>
<td>Refer to: F07861</td>
<td>An external fault is triggered with a 1/0 signal.</td>
</tr>
<tr>
<td>p2108[0...n] BI: External fault 3 / External fault 3</td>
<td>Sets the signal source for external fault 3. External fault 3 is initiated by the following AND logic operation: - BI: p2108 negated - BI: p3111 - BI: p3112 negated</td>
<td>Refer to: p3110, p3111, p3112</td>
<td>Refer to: F07862</td>
</tr>
<tr>
<td>r2109[0...63] 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, r2130, r2133, r2136</td>
<td>The time comprises r2136 (days) and r2109 (milliseconds). 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>
</tr>
</tbody>
</table>

#### p2106[0...n] BI: External fault 1 / External fault 1
- **Access level:** 3
- **Can be changed:** U, T
- **Units group:** -
- **Min:** -
- **Max:** -
- **Factory setting:** 1

#### p2107[0...n] BI: External fault 2 / External fault 2
- **Access level:** 3
- **Can be changed:** U, T
- **Units group:** -
- **Min:** -
- **Max:** -
- **Factory setting:** 1

#### p2108[0...n] BI: External fault 3 / External fault 3
- **Access level:** 3
- **Can be changed:** U, T
- **Units group:** -
- **Min:** -
- **Max:** -
- **Factory setting:** 1

#### r2109[0...63] Fault time removed in milliseconds / t_flt resolved ms
- **Access level:** 3
- **Can be changed:** -
- **Units group:** -
- **Min:** - [ms]
- **Max:** - [ms]
- **Factory setting:** - [ms]
### r2110[0...63]  
**Alarm number / Alarm number**

<table>
<thead>
<tr>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm number / Alarm number is identical to r2122.</td>
<td>Unsigned16</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### p2111  
**Alarm counter / Alarm counter**

<table>
<thead>
<tr>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of alarms that have occurred after the last reset.</td>
<td>Unsigned16</td>
<td>3</td>
<td>U, T</td>
<td>-</td>
<td>0</td>
<td>65535</td>
<td>0</td>
</tr>
</tbody>
</table>

**Dependency:**  
When p2111 is set to 0, the following is initiated:  
- all of the alarms of the alarm buffer that have gone [0...7] are transferred into the alarm history [8...63].  
- the alarm buffer [0...7] is deleted.

**Note:**  
The parameter is reset to 0 at POWER ON.

### p2112[0...n]  
**BI: External alarm 1 / External alarm 1**

<table>
<thead>
<tr>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the signal source for external alarm 1.</td>
<td>U32 / Binary</td>
<td>3</td>
<td>U, T</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Dependency:**  
Refer to: A07850

**Note:**  
An external alarm is triggered with a 1/0 signal.

### r2114[0...1]  
**System runtime total / Sys runtime tot**

<table>
<thead>
<tr>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the total system runtime for the drive unit.</td>
<td>Unsigned32</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Index:**  
- [0] = Milliseconds  
- [1] = Days

**Dependency:**  
Refer to: r0948, r2109, r2123, r2125, r2130, r2136, r2145, r2146

**Note:**  
When the electronic power supply is switched out, the counter values are saved.  
After the drive unit is powered up, the counter continues to run with the last value that was saved.
**Parameters**

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2116[0...n]</td>
<td>BI: External alarm 2 / External alarm 2</td>
<td></td>
<td>An external alarm is triggered with a 1/0 signal.</td>
</tr>
<tr>
<td>p2117[0...n]</td>
<td>BI: External alarm 3 / External alarm 3</td>
<td></td>
<td>An external alarm is triggered with a 1/0 signal.</td>
</tr>
<tr>
<td>p2118[0...19]</td>
<td>Sets the message number for message type. / Msg_no Msg_type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p2119[0...19]</td>
<td>Setting the message type / Message type</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source for external alarm 2.</td>
<td>Refer to: A07851</td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source for external alarm 3.</td>
<td>Refer to: A07852</td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Selects faults or alarms for which the message type should be changed.</td>
<td>Refer to: p2119</td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Selects the fault or alarm selection and sets the required type of message realized under the same index.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notice:</strong></td>
<td>It is not possible to re-parameterize the message type in the following cases:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- if there is no existing message number.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the message type for the selected fault or alarm.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Value:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Selects the fault or alarm selection and sets the required type of message realized under the same index.</td>
<td>Refer to: p2118</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The message type can only be changed for messages with the appropriate identification.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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**

- **Access level:** 4
- **Can be changed:** -
- **Units group:** -
- **Can be changed:** -
- **Units group:** -
- **Min:** -
- **Max:** -
- **Scaling:** -
- **Unit selection:** -
- **Data type:** Unsigned16
- **Data set:** -
- **Factory setting:** -

**Description:**
Displays the sum of all of the fault and alarm buffer changes in the drive unit.

**Dependency:**
Refer to: r0944, r2121

**r2121**
**CO: Counter, alarm buffer changes / Alrm buff changed**

- **Access level:** 3
- **Can be changed:** -
- **Units group:** -
- **Can be changed:** -
- **Units group:** -
- **Min:** -
- **Max:** -
- **Scaling:** -
- **Unit selection:** -
- **Data type:** Unsigned16
- **Data set:** -
- **Factory setting:** -

**Description:**
This counter is incremented every time the alarm buffer changes.

**Dependency:**
Refer to: r2110, r2122, r2123, r2124, r2125

**r2122[0...63]**
**Alarm code / Alarm code**

- **Access level:** 2
- **Can be changed:** -
- **Units group:** -
- **Can be changed:** -
- **Units group:** -
- **Min:** -
- **Max:** -
- **Scaling:** -
- **Unit selection:** -
- **Data type:** Unsigned16
- **Data set:** -
- **Factory setting:** -

**Description:**
Displays the number of alarms that have occurred.

**Dependecy:**
Refer to: r2110, r2123, r2124, r2125, r2134, r2145, r2146

**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**

- **Access level:** 3
- **Can be changed:** -
- **Units group:** -
- **Can be changed:** -
- **Units group:** -
- **Min:** - [ms]
- **Max:** - [ms]
- **Scaling:** -
- **Unit selection:** -
- **Data type:** Unsigned32
- **Data set:** -
- **Factory setting:** - [ms]

**Description:**
Displays the system runtime in milliseconds when the alarm occurred.

**Dependency:**
Refer to: r2110, r2122, r2124, r2125, r2134, r2145, r2146

**Notice:**
The time comprises r2145 (days) and r2123 (milliseconds).
### Note:
The buffer parameters are cyclically updated in the background (refer to status signal in r2139). The structure of the alarm buffer and the assignment of the indices is shown in r2122.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2124[0...63] <strong>Alarm value / Alarm value</strong></td>
<td>Displays additional information about the active alarm (as integer number).</td>
<td>Refer to: r2110, r2122, r2123, r2125, r2134, r2145, r2146</td>
<td>The time comprises r2146 (days) and r2125 (milliseconds).</td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
</tr>
<tr>
<td>r2125[0...63] <strong>Alarm time removed in milliseconds / t_alarm_res ms</strong></td>
<td>Displays the system runtime in milliseconds when the alarm was cleared.</td>
<td>Refer to: r2110, r2122, r2123, r2124, r2134, r2145, r2146</td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
<td></td>
</tr>
<tr>
<td>p2126[0...19] <strong>Setting fault number for acknowledge mode / Fault_no ackn_mode</strong></td>
<td>Selects the faults for which the acknowledge mode is to be changed</td>
<td>Selects the faults and sets the required acknowledge mode realized under the same index</td>
<td>It is not possible to re-parameterize the acknowledge mode of a fault in the following cases: Fault number does not exist. Message type is not &quot;fault&quot; (F).</td>
<td>It is not possible to re-parameterize the acknowledge mode of a fault in the following cases: Fault number does not exist. Message type is not &quot;fault&quot; (F).</td>
</tr>
<tr>
<td>p2127[0...19] <strong>Sets acknowledgement mode / Acknowledge mode</strong></td>
<td>Sets the acknowledge mode for selected fault.</td>
<td>Selects the faults and sets the required acknowledge mode realized under the same index</td>
<td>Acknowledgment only using POWER ON Ack IMMEDIATELY after the fault cause has been removed</td>
<td>Acknowledgment only using POWER ON Ack IMMEDIATELY after the fault cause has been removed</td>
</tr>
</tbody>
</table>
Notice: It is not possible to re-parameterize the acknowledge mode of a fault in the following cases:
- if there is no existing fault number.
- the message type is not "fault" (F).

Note: Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

The acknowledge mode can only be changed for faults with the appropriate identification.

Example:
F12345 and acknowledge mode = IMMEDIATELY (POWER ON)
--> The acknowledge mode can be changed from IMMEDIATELY to POWER ON.

p2128[0...15] Selecting fault/alarm code for trigger / Message trigger

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

Min: 0
Max: 65535
Factory setting: 0

Description: Selects faults or alarms which can be used as trigger.
Dependency: Refer to: r2129

r2129.0...15 CO/BO: Trigger word for faults and alarms / Trigger word

Access level: 3
Calculated: -
Data type: Unsigned16
Can be changed: -
Scaling: -
Data set: -
Units group: -
Unit selection: -

Min -
Max -
Factory setting -

Description: Trigger signal for the selected faults and alarms
Bit field: Bit Signal name 1 signal 0 signal FP
| 00 | Trigger signal p2128[0] | ON | OFF | - |
| 01 | Trigger signal p2128[1] | ON | OFF | - |
| 02 | Trigger signal p2128[2] | ON | OFF | - |
| 03 | Trigger signal p2128[3] | ON | OFF | - |
| 04 | Trigger signal p2128[4] | ON | OFF | - |
| 05 | Trigger signal p2128[5] | ON | OFF | - |
| 06 | Trigger signal p2128[6] | ON | OFF | - |
| 07 | Trigger signal p2128[7] | ON | OFF | - |
| 08 | Trigger signal p2128[8] | ON | OFF | - |
| 09 | Trigger signal p2128[9] | ON | OFF | - |
| 10 | Trigger signal p2128[10] | ON | OFF | - |
| 11 | Trigger signal p2128[11] | ON | OFF | - |
| 12 | Trigger signal p2128[12] | ON | OFF | - |
| 13 | Trigger signal p2128[13] | ON | OFF | - |
| 14 | Trigger signal p2128[14] | ON | OFF | - |
| 15 | Trigger signal p2128[15] | ON | OFF | - |

Dependency: If one of the faults or alarms selected in p2128[n] occurs, then the particular bit of this binector output is set.
Refer to: p2128

Note: CO: r2129 = 0 --> None of the selected messages has occurred.
CO: r2129 > 0 --> At least one of the selected messages has occurred.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r2130[0...63]</strong> Fault time received in days / (t_{\text{fault recv}}) days</td>
<td>Displays the system runtime in days when the fault occurred.</td>
<td>Refer to: r0945, r0947, r0948, r0949, r2109, r2133, r2136&lt;br&gt;The time comprises r2130 (days) and r0948 (milliseconds).&lt;br&gt;The value displayed in p2130 refers to 01.01.1970.</td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
<td><strong>Access level:</strong> 3&lt;br&gt;<strong>Calculated:</strong> -&lt;br&gt;<strong>Can be changed:</strong> -&lt;br&gt;<strong>Units group:</strong> -&lt;br&gt;<strong>Min:</strong> -&lt;br&gt;<strong>Max:</strong> -&lt;br&gt;<strong>Data type:</strong> Unsigned16&lt;br&gt;<strong>Data set:</strong> -&lt;br&gt;<strong>Scaling:</strong> -&lt;br&gt;<strong>Factory setting:</strong> -</td>
</tr>
<tr>
<td><strong>r2131 CO: Actual fault code / Actual fault code</strong></td>
<td>Displays the code of the oldest active fault.</td>
<td>Refer to: r3131, r3132</td>
<td>0: No fault present.</td>
<td><strong>Access level:</strong> 2&lt;br&gt;<strong>Calculated:</strong> -&lt;br&gt;<strong>Can be changed:</strong> -&lt;br&gt;<strong>Units group:</strong> -&lt;br&gt;<strong>Min:</strong> -&lt;br&gt;<strong>Max:</strong> -&lt;br&gt;<strong>Data type:</strong> Unsigned16&lt;br&gt;<strong>Data set:</strong> -&lt;br&gt;<strong>Scaling:</strong> -&lt;br&gt;<strong>Factory setting:</strong> -</td>
</tr>
<tr>
<td><strong>r2132 CO: Actual alarm code / Actual alarm code</strong></td>
<td>Displays the code of the last alarm that occurred.</td>
<td>0: No alarm present.</td>
<td><strong>Access level:</strong> 2&lt;br&gt;<strong>Calculated:</strong> -&lt;br&gt;<strong>Can be changed:</strong> -&lt;br&gt;<strong>Units group:</strong> -&lt;br&gt;<strong>Min:</strong> -&lt;br&gt;<strong>Max:</strong> -&lt;br&gt;<strong>Data type:</strong> Unsigned16&lt;br&gt;<strong>Data set:</strong> -&lt;br&gt;<strong>Scaling:</strong> -&lt;br&gt;<strong>Factory setting:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>r2133[0...63]</strong> Fault value for float values / Fault val float</td>
<td>Displays additional information about the fault that occurred for float values.</td>
<td>Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2136</td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
<td><strong>Access level:</strong> 3&lt;br&gt;<strong>Calculated:</strong> -&lt;br&gt;<strong>Can be changed:</strong> -&lt;br&gt;<strong>Units group:</strong> -&lt;br&gt;<strong>Min:</strong> -&lt;br&gt;<strong>Max:</strong> -&lt;br&gt;<strong>Data type:</strong> FloatingPoint32&lt;br&gt;<strong>Data set:</strong> -&lt;br&gt;<strong>Scaling:</strong> -&lt;br&gt;<strong>Factory setting:</strong> -</td>
</tr>
<tr>
<td><strong>r2134[0...63]</strong> Alarm value for float values / Alarm value float</td>
<td>Displays additional information about the active alarm for float values.</td>
<td>Refer to: r2110, r2122, r2123, r2124, r2125, r2145, r2146</td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
<td><strong>Access level:</strong> 3&lt;br&gt;<strong>Calculated:</strong> -&lt;br&gt;<strong>Can be changed:</strong> -&lt;br&gt;<strong>Units group:</strong> -&lt;br&gt;<strong>Min:</strong> -&lt;br&gt;<strong>Max:</strong> -&lt;br&gt;<strong>Data type:</strong> FloatingPoint32&lt;br&gt;<strong>Data set:</strong> -&lt;br&gt;<strong>Scaling:</strong> -&lt;br&gt;<strong>Factory setting:</strong> -</td>
</tr>
</tbody>
</table>
### r2135.12...15 CO/BO: Status word faults/alarms 2 / ZSW fault/alarm 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>12</td>
<td>Fault motor overtemperature</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Fault power unit thermal overload</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Alarm motor overtemperature</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Alarm power unit thermal overload</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

### r2136[0...63] Fault time removed in days / t_flt resolv. days

<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>07</td>
<td>Acknowledge fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>External alarm 1 (A07850) effective</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>External alarm 2 (A07851) effective</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>External alarm 3 (A07852) effective</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>External fault 1 (F07860) effective</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>External fault 2 (F07861) effective</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>External fault 3 (F07862) effective</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

### r2138.7...15 CO/BO: Control word faults/alarms / STW fault/alarm

<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>07</td>
<td>Being acknowledged</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Acknowledgment required</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Fault present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

### r2139.0...12 CO/BO: Status word faults/alarms 1 / ZSW fault/alarm 1

<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>Being acknowledged</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Acknowledgment required</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Fault present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2140[0...n]</td>
<td>Hysteresis speed 2 / n_hysteresis 2</td>
<td>3</td>
<td>p0340 = 1,3,5</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>p0505</td>
<td>90.00 [rpm]</td>
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</tr>
<tr>
<td>p2141[0...n]</td>
<td>Speed threshold 1 / n_thresh val 1</td>
<td>3</td>
<td>p0340 = 1,3,5</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>p0505</td>
<td>5.00 [rpm]</td>
</tr>
<tr>
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</tr>
<tr>
<td>p2142[0...n]</td>
<td>Hysteresis speed 1 / n_hysteresis 1</td>
<td>3</td>
<td>p0340 = 1,3,5</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>p0505</td>
<td>2.00 [rpm]</td>
</tr>
<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p2144[0...n]</td>
<td>BI: Motor stall monitoring enable (negated) / Mot stall enab neg</td>
<td>4</td>
<td>-</td>
<td>U32 / Binary</td>
<td>U, T</td>
<td>-</td>
<td>p0170</td>
<td>0</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Notes:

- Re bit 03, 07:
  - These bits are set if at least one fault/alarm occurs. Data is entered into the fault/alarm buffer with delay. This is the reason that the fault/alarm buffer should only be read if, after "fault present"/"alarm present" has occurred, a change in the buffer was also detected (r0944, r9744, r2121).
- Re bit 06, 08:
  - These status bits are used for internal diagnostic purposes only.
- Re bit 11, 12:
  - These status bits are used for the classification of internal alarm classes and are intended for diagnostic purposes only on certain automation systems with integrated SINAMICS functionality.

#### Description:

- **Hysteresis speed 2 / n_hysteresis 2**
  - Sets the hysteresis speed (bandwidth) for the following signals:
    - \(|n_{act}| \leq \text{speed threshold value 2}\) (BO: r2197.1)
    - \(|n_{act}| > \text{speed threshold value 2}\) (BO: r2197.2)
  - **Dependency:** Refer to: p2155, r2197

- **Speed threshold 1 / n_thresh val 1**
  - Sets the speed threshold value for the signal "f or n comparison value reached or exceeded" (BO: r2199.1).
  - **Dependency:** Refer to: p2142, r2199

- **Hysteresis speed 1 / n_hysteresis 1**
  - Sets the hysteresis speed (bandwidth) for the signal "f or n / v comparison value reached or exceeded" (BO: r2199.1).
  - **Dependency:** Refer to: p2141, r2199

- **BI: Motor stall monitoring enable (negated) / Mot stall enab neg**
  - Sets the signal source for the negated enable (0 = enable) of the motor stall monitoring.
Dependency: Refer to: p2163, p2164, p2166, r2197, r2198  
Refer to: F07900  
Note: When interconnecting the enable signal with r2197.7 then the stall signal is suppressed if there is no speed setpoint - actual value deviation.

**r2145[0...63]**  
Alarm time received in days / t_alarm recv days  
Access level: 3  
Can be changed:  
Units group:  
Min:  
Max:  
Factory setting  
Data type: Unsigned16  
Description: Displays the system runtime in days when the alarm occurred.  
Dependency: Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2146  
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).

**r2146[0...63]**  
Alarm time removed in days / t_alarm res days  
Access level: 3  
Can be changed:  
Units group:  
Min:  
Max:  
Factory setting  
Data type: Unsigned16  
Description: Displays the system runtime in days when the alarm was cleared.  
Dependency: Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2145  
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).

**p2148[0...n]**  
BI: RFG active / RFG active  
Access level: 3  
Can be changed: U, T  
Units group:  
Min:  
Max:  
Factory setting  
Data type: U32 / Binary  
Description: Sets the signal source for the signal "ramp-function generator active" for the following signals/messages:  "Speed setpoint - actual value deviation within tolerance t_on" (BO: r2199.4)  "Ramp-up/ramp-down completed" (BO: r2199.5)  
Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.  
Note: The binector input is automatically interconnected to r1199.2 as a default setting.

**p2149[0...n]**  
Monitoring configuration / Monit config  
Access level: 3  
Can be changed: U, T  
Units group:  
Min:  
Max:  
Factory setting  
Data type: Unsigned16  
Description: Sets the configuration for messages and monitoring functions.  
Bit field:  
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Enable alarm A07903</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
</tr>
<tr>
<td>01</td>
<td>Load monitoring only in the 1st quadrant</td>
<td>Yes</td>
<td>No</td>
<td>8013</td>
</tr>
<tr>
<td>03</td>
<td>n_act &gt; p2155 own hysteresis</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
</tr>
</tbody>
</table>

Dependency: Refer to: r2197  
Refer to: A07903
### Parameters

#### Parameter list

**Note:**

Re bit 00:
- Alarm A07903 is output when the bit is set and with r2197.7 = 0 (n_set <> n_act).

Re bit 01:
- When the bit is set, load monitoring is only carried out in the 1st quadrant as a result of the positive characteristic parameters (p2152 ... p2190).

Re bit 03:
- When the bit is set, r2197 bit 1 and bit 2 are determined via separate hystereses.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Data set</th>
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<tbody>
<tr>
<td>p2150[0...n]</td>
<td><strong>Hysteresis speed 3 / n_hysteresis 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level</td>
<td>3</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>3_1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [rpm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>300.00 [rpm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>2.00 [rpm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Sets the hysteresis speed (bandwidth) for the following signals:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&quot;[n_act] &lt; speed threshold value 3&quot; (BO: r2199.0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&quot;n_set &gt;= 0&quot; (BO: r2198.5)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&quot;n_act &gt;= 0&quot; (BO: r2197.3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: p2161, r2197, r2199</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| p2151[0...n] | **Cl: Speed setpoint for messages/signals / n_set for msg**                  |                  |                      |                |                  |
| Access level | 3                                                                            |                  |                      |                |                  |
| Can be changed | T                                                                            |                  |                      |                |                  |
| Units group  | -                                                                            |                  |                      |                |                  |
| Min          | -                                                                            |                  |                      |                |                  |
| Max          | -                                                                            |                  |                      |                |                  |
| Factory setting | 1170[0]                                                                  |                  |                      |                |                  |
|              | **Description:** Sets the signal source for the speed setpoint for the following messages: |                  |                      |                |                  |
|              | "Speed setpoint - actual value deviation within tolerance t_off" (BO: r2197.7) |                  |                      |                |                  |
|              | "Ramp-up/ramp-down completed" (BO: r2199.5)                                  |                  |                      |                |                  |
|              | "[n_set] < p2161" (BO: r2198.4)                                               |                  |                      |                |                  |
|              | "n_set > 0" (BO: r2198.5)                                                     |                  |                      |                |                  |
| Dependency   | Refer to: r2197, r2199                                                        |                  |                      |                |                  |

| p2152[0...n] | **Delay for comparison n > n_max / Del n > n_max**                           |                  |                      |                |                  |
| Access level | 3                                                                            |                  |                      |                |                  |
| Can be changed | U, T                                                                         |                  |                      |                |                  |
| Units group  | -                                                                            |                  |                      |                |                  |
| Min          | 0 [ms]                                                                       |                  |                      |                |                  |
| Max          | 10000 [ms]                                                                    |                  |                      |                |                  |
| Factory setting | 200 [ms]                                                                   |                  |                      |                |                  |
|              | **Description:** Delay time for the comparison of the speed with the maximum speed. |                  |                      |                |                  |
| Dependency   | Refer to: p1082, r1084, r1087, p2162                                          |                  |                      |                |                  |

| p2153[0...n] | **Speed actual value filter time constant / n_act_filt T**                    |                  |                      |                |                  |
| Access level | 3                                                                            |                  |                      |                |                  |
| Can be changed | U, T                                                                         |                  |                      |                |                  |
| Units group  | -                                                                            |                  |                      |                |                  |
| Min          | 0 [ms]                                                                       |                  |                      |                |                  |
| Max          | 1000000 [ms]                                                                  |                  |                      |                |                  |
| Factory setting | 0 [ms]                                                                    |                  |                      |                |                  |
|              | **Description:** Sets the time constant of the PT1 element to smooth the speed / velocity actual value. |                  |                      |                |                  |
|              | The smoothed actual speed/velocity is compared with the threshold values and is only used for messages and signals. |                  |                      |                |                  |
| Dependency   | Refer to: r2169                                                             |                  |                      |                |                  |
### Parameter List

#### p2155[0...n]  Speed threshold 2 / n_thresh val 2

| Access level: | 3 |
| Can be changed: | U, T |
| Units group: | 3_1 |
| Calculated: | \( p0340 = 1,3,5 \) |
| Data type: | FloatingPoint32 |
| Data set: | DDS, p0180 |
| Min | 0.00 [rpm] |
| Max | 210000.00 [rpm] |
| Factory setting | 900.00 [rpm] |

**Description:**
Sets the speed threshold value for the following messages:
*|n_{act}| < = speed threshold value 2* (BO: r2197.1)
*|n_{act}| > speed threshold value 2* (BO: r2197.2)

**Dependency:**
Refer to: p2140, r2197

#### p2156[0...n]  On delay, comparison value reached / t_on cmpr val rchd

| Access level: | 3 |
| Can be changed: | U, T |
| Units group: | - |
| Calculated: | - |
| Data type: | FloatingPoint32 |
| Data set: | DDS, p0180 |
| Min | 0.0 [ms] |
| Max | 10000.0 [ms] |
| Factory setting | 0.0 [ms] |

**Description:**
Sets the switch-in delay time for the signal "comparison value reached" (BO: r2199.1).

**Dependency:**
Refer to: p2141, p2142, r2199

#### p2157[0...n]  Speed threshold 5 / n_thresh val 5

| Access level: | 3 |
| Can be changed: | U, T |
| Units group: | 3_1 |
| Calculated: | \( p0340 = 1,3,5 \) |
| Data type: | FloatingPoint32 |
| Data set: | DDS, p0180 |
| Min | 0.00 [rpm] |
| Max | 210000.00 [rpm] |
| Factory setting | 900.00 [rpm] |

**Description:**
Sets the speed threshold value for the following messages:
*|n_{act}| < = speed threshold value 5* (BO: r2198.0)
*|n_{act}| > speed threshold value 5* (BO: r2198.1)

**Dependency:**
Refer to: p2150, p2158

#### p2158[0...n]  Delay for n_act comparison with speed threshold value 5 / Del compar n_5

| Access level: | 3 |
| Can be changed: | U, T |
| Units group: | - |
| Calculated: | - |
| Data type: | Unsigned16 |
| Data set: | DDS, p0180 |
| Min | 0 [ms] |
| Max | 10000 [ms] |
| Factory setting | 10 [ms] |

**Description:**
Delay time for the comparison of the speed with the speed threshold value 5 (P2157).

**Dependency:**
Refer to: p2150, p2157

#### p2159[0...n]  Speed threshold 6 / n_thresh val 6

| Access level: | 3 |
| Can be changed: | U, T |
| Units group: | 3_1 |
| Calculated: | \( p0340 = 1,3,5 \) |
| Data type: | FloatingPoint32 |
| Data set: | DDS, p0180 |
| Min | 0.00 [rpm] |
| Max | 210000.00 [rpm] |
| Factory setting | 900.00 [rpm] |

**Description:**
Sets the speed threshold value for the following messages:
*|n_{act}| < = speed threshold value 6* (BO: r2198.2)
*|n_{act}| > speed threshold value 6* (BO: r2198.3)

**Dependency:**
Refer to: p2150, p2160
### Parameter List

#### p2160[0...n] Delay for n_act comparison with speed threshold value 6 / Del compar n_6

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

| Min | 0 [ms] | Max | 10000 [ms] | Factory setting | |

**Description:** Sets the delay time for the comparison of the speed with the speed threshold value 6 (p2159).

**Dependency:** Refer to: p2150, p2159

#### p2161[0...n] Speed threshold 3 / n_thresh val 3

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>p0340 = 1,3,5</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>3_1</td>
<td>Unit selection:</td>
<td>p0505</td>
<td></td>
</tr>
</tbody>
</table>

| Min | 0.00 [rpm] | Max | 210000.00 [rpm] | Factory setting | 5.00 [rpm] |

**Description:** Sets the speed threshold value for the signal "|n_act| < speed threshold value 3" (BO: r2199.0).

**Dependency:** Refer to: p2150, r2199

#### p2162[0...n] Hysteresis speed n_act > n_max / Hyst n_act>n_max

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>p0340 = 1,3,5</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>3_1</td>
<td>Unit selection:</td>
<td>p0505</td>
<td></td>
</tr>
</tbody>
</table>

| Min | 0.00 [rpm] | Max | 60000.00 [rpm] | Factory setting | 0.00 [rpm] |

**Description:** Sets the hysteresis speed (bandwidth) for the signal "n_act > n_max" (BO: r2197.6).

**Dependency:** Refer to: r1084, r1087, r2197

**Notice:**
- For p0322 = 0, the following applies: p2162 <= 0.1 * p0311
- For p0322 > 0, the following applies: p2162 <= 1.02 * p0322 - p1082

If one of the conditions is violated, p2162 is appropriately and automatically reduced when exiting the commissioning mode.

**Note:**
- If significant overshoot occurs in the maximum speed range (e.g. due to load shedding), you are advised to increase the dynamic response of the speed controller (if possible). If this is insufficient, the hysteresis p2162 can only be increased by more than 10% of the rated speed when the maximum speed (p0322) of the motor is sufficiently greater than the speed limit p1082.

#### p2163[0...n] Speed threshold 4 / n_thresh val 4

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>p0340 = 1,3,5</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group:</td>
<td>3_1</td>
<td>Unit selection:</td>
<td>p0505</td>
<td></td>
</tr>
</tbody>
</table>

| Min | 0.00 [rpm] | Max | 210000.00 [rpm] | Factory setting | 90.00 [rpm] |

**Description:** Sets the speed threshold value for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).

**Dependency:** Refer to: p2164, p2166, r2197
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Scaling</th>
<th>Data set</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2164[0...n]</strong></td>
<td>Hysteresis speed 4 / n_hysteresis 4</td>
<td>3</td>
<td>p0340 = 1,3,5</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>DDS, p0180</td>
<td>2.00 [rpm]</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Units group:</td>
<td>3_1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [rpm]</td>
<td>Max</td>
<td>200.00 [rpm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p2163, p2166, r2197</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>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Scaling</th>
<th>Data set</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2166[0...n]</strong></td>
<td>Off delay n_act = n_set / t_del_off n_i=n_so</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>DDS, p0180</td>
<td>200.0 [ms]</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Units group:</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [ms]</td>
<td>Max</td>
<td>10000.0 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p2163, p2164, r2197</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Scaling</th>
<th>Data set</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2167[0...n]</strong></td>
<td>Switch-on delay n_act = n_set / t_on n_act=n_set</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>DDS, p0180</td>
<td>200.0 [ms]</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Units group:</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [ms]</td>
<td>Max</td>
<td>10000.0 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p2163, p2164, r2197</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>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Scaling</th>
<th>Data set</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2169</td>
<td>CO: Actual speed smoothed signals / n_act smth message</td>
<td>2</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>p2000</td>
<td>-</td>
<td>- [rpm]</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Units group:</td>
<td>3_1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [rpm]</td>
<td>Max</td>
<td>- [rpm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Dependency:</td>
<td>Refer to: p2153</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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<th>Calculated</th>
<th>Data type</th>
<th>Scaling</th>
<th>Data set</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2170[0...n]</strong></td>
<td>Current threshold value / I_thres</td>
<td>3</td>
<td>p0340 = 1,3,5</td>
<td>FloatingPoint32</td>
<td>p2002</td>
<td>DDS, p0180</td>
<td>0.00 [Arms]</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Units group:</td>
<td>6_2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [Arms]</td>
<td>Max</td>
<td>10000.00 [Arms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p2171</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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SINAMICS G120 CU240B/E-2 Control Units List Manual (LH11), 01/2012
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Data type</th>
<th>Data set</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2171[0...n]</td>
<td><strong>Current threshold value reached delay time / ( t_{del _thresh _rch} )</strong>&lt;br&gt; Sets the delay time for the comparison of the current actual value ( r0068 ) with the current threshold value ( p2170 ).</td>
<td>3</td>
<td>-</td>
<td>U, T</td>
<td>-</td>
<td>Unsigned16</td>
<td>DDS, p0180</td>
<td>10 [ms]</td>
</tr>
<tr>
<td>p2172[0...n]</td>
<td><strong>DC link voltage, threshold value / ( V_{dc _thresh _val} )</strong>&lt;br&gt; Sets the DC link voltage threshold value for the following messages:&lt;br&gt; <em>( V_{dc _act} &lt;= V_{dc _threshold _p2172} ) (BO: r2197.9)</em>&lt;br&gt; <em>( V_{dc _act} &gt; V_{dc _threshold _p2172} ) (BO: r2197.10)</em></td>
<td>3</td>
<td>-</td>
<td>U, T</td>
<td>5_2</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>800 [V]</td>
</tr>
<tr>
<td>p2173[0...n]</td>
<td><strong>DC link voltage comparison delay time / ( t_{del _Vdc} )</strong>&lt;br&gt; Sets the delay time for the comparison of the DC link voltage ( r0070 ) with the threshold value ( p2172 ).</td>
<td>3</td>
<td>-</td>
<td>U, T</td>
<td>-</td>
<td>Unsigned16</td>
<td>DDS, p0180</td>
<td>10 [ms]</td>
</tr>
<tr>
<td>p2174[0...n]</td>
<td><strong>Torque threshold value 1 / ( M_{_thresh _val _1} )</strong>&lt;br&gt; Sets the torque threshold value for the messages:&lt;br&gt; <em>( Torque _setpoint &lt; torque _threshold _value _1 ) and ( n _set ) reached</em> (BO: r2198.9)&lt;br&gt; <em>( Torque _setpoint &lt; torque _threshold _value _1 ) (BO: r2198.10)</em>&lt;br&gt; <em>( Torque _setpoint &gt; torque _threshold _value _1 ) (BO: r2198.13)</em></td>
<td>3</td>
<td>-</td>
<td>U, T</td>
<td>7_1</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>5.13 [Nm]</td>
</tr>
<tr>
<td>p2175[0...n]</td>
<td><strong>Motor blocked speed threshold / ( Mot _lock _n _thresh )</strong>&lt;br&gt; Sets the speed threshold for the message &quot;Motor blocked&quot; (BO: r2198.6).</td>
<td>3</td>
<td>p0340 = 1,3,5</td>
<td>U, T</td>
<td>3_1</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>120.00 [rpm]</td>
</tr>
</tbody>
</table>
Note: The following applies for sensorless vector control:
At low speeds in open-loop speed controlled operation (see p1755, p1756), a blocked motor cannot be detected.

**p2176[0...n]**  Torque threshold value comparison delay time / M_thrsh comp T_del

| Access level: | 3 | Calculated: | - |
| Can be changed: | U, T | Scaling: | - |
| Units group: | - | Unit selection: | - |
| Min | 0 [ms] | Max | 10000 [ms] |
| Factory setting | 200 [ms] |

**Description:** Sets the delay time for the comparison of the torque actual value (r0080) with torque threshold value 1 (p2174).

**Dependency:** Refer to: p2174

**p2177[0...n]**  Motor blocked delay time / Mot lock t_del

| Access level: | 3 | Calculated: | p0340 = 1,3.5 |
| Can be changed: | U, T | Scaling: | - |
| Units group: | - | Unit selection: | - |
| Min | 0.000 [s] | Max | 65.000 [s] |
| Factory setting | 3.000 [s] |

**Description:** Sets the delay time for the message "Motor blocked" (BO: r2198.6).

**Dependency:** Refer to: p0500, p2175, r2198

**Note:** The following applies for sensorless vector control:
At low speeds a locked motor can only be detected if no change is made to open-loop speed controlled operation. If this is the case, the value in p2177 must be reduced accordingly (p2177 < p1758) before time p2177 has elapsed in order to detect the locked state reliably.
As countermeasure, it is generally also possible to set p1750.6. This is only not permitted if the drive is slowly reversed by the load at the torque limit (speed below p1755 for longer than p1758).

**p2178[0...n]**  Motor stalled delay time / Mot stall t_del

| Access level: | 3 | Calculated: | p0340 = 1,3 |
| Can be changed: | U, T | Scaling: | - |
| Units group: | - | Unit selection: | - |
| Min | 0.000 [s] | Max | 10.000 [s] |
| Factory setting | 0.010 [s] |

**Description:** Sets the delay time for the message "Motor stalled" (BO: r2198.7).

**Dependency:** Refer to: r2198

**Note:** In the open-loop speed controlled operating range (see p1755, p1756), vector control stall monitoring depends on threshold p1745.
At higher speeds, the difference between flux setpoint r0083 and flux actual value r0084 is monitored.

**p2179[0...n]**  Output load identification current limit / Outp Iden I_lim

| Access level: | 3 | Calculated: | p0340 = 1,3.5 |
| Can be changed: | U, T | Scaling: | p2002 |
| Units group: | 6_2 | Unit selection: | p0505 |
| Min | 0.00 [Arms] | Max | 1000.00 [Arms] |
| Factory setting | 0.00 [Arms] |

**Description:** Sets the current limit for output load identification.

**Dependency:** Refer to: p2180

**Notice:** For synchronous motors the output current can be almost zero under no load conditions.

**Note:** A missing output load condition exists if the motor is either not connected or a phase has failed.
### p2180[0...n] Missing output load delay time / No load t_delay

- **Description:** Sets the delay time to detect a missing output load.
- **Dependency:** Refer to: p2179

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td>2000 [ms]</td>
</tr>
</tbody>
</table>

### p2181[0...n] Load monitoring response / Load monit resp

- **Description:** Sets the response when evaluating the load monitoring.
- **Value:**
  0: Load monitoring disabled
  1: A07920 for torque/speed too low
  2: A07921 for torque/speed too high
  3: A07922 for torque/speed out of tolerance
  4: F07923 for torque/speed too low
  5: F07924 for torque/speed too high
  6: F07925 for torque/speed out of tolerance
- **Dependency:** Refer to: p2182, p2183, p2184, p2185, p2186, p2187, p2188, p2189, p2190, r2198, p3230, p3231
  Refer to: A07920, A07921, A07922, F07923, F07924, F07925
- **Note:** The response to the faults F07923 ... F07925 can be set. F07926 is evaluated only if p2181 is not zero.
  This parameter setting has no effect on the production of fault F07936.

### p2182[0...n] Load monitoring speed threshold value 1 / n_thresh 1

- **Description:** Sets the speed/torque envelope curve for load monitoring.
  - The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:
    - p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)
    - p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)
    - p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)
- **Dependency:** The following applies: p2182 < p2183 < p2184
  Refer to: p2182, p2183, p2184, p2185, p2186, p2187, p2188, p2190, r2198, p3230, p3231

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [rpm]</td>
<td>210000.00 [rpm]</td>
<td>150.00 [rpm]</td>
</tr>
</tbody>
</table>

### p2183[0...n] Load monitoring speed threshold value 2 / n_thresh 2

- **Description:** Sets the speed/torque envelope curve for load monitoring.

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [rpm]</td>
<td>210000.00 [rpm]</td>
<td>900.00 [rpm]</td>
</tr>
</tbody>
</table>
The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:

- \( p2182 \) (n_threshold 1) \( \rightarrow \) \( p2185 \) (M_threshold 1, upper), \( p2186 \) (M_threshold 1, lower)
- \( p2183 \) (n_threshold 2) \( \rightarrow \) \( p2187 \) (M_threshold 2, upper), \( p2188 \) (M_threshold 2, lower)
- \( p2184 \) (n_threshold 3) \( \rightarrow \) \( p2189 \) (M_threshold 3, upper), \( p2190 \) (M_threshold 3, lower)

**Dependency:**
The following applies: \( p2182 < p2183 < p2184 \)

**Reference:** \( p2182, p2184, p2187, p2188 \)

### Parameter Description

**p2184[0...n]**  
**Load monitoring speed threshold value 3 / n_thresh 3**

- **Access level:** 3
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** U, T
- **Scaling:** -
- **Data set:** DDS, p0180
- **Units group:** 3_1
- **Unit selection:** p0505
- **Min:** 0.00 [rpm]
- **Max:** 210000.00 [rpm]
- **Factory setting:** 1500.00 [rpm]

**Description:**
Sets the speed/torque envelope curve for load monitoring.

The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:

- \( p2182 \) (n_threshold 1) \( \rightarrow \) \( p2185 \) (M_threshold 1, upper), \( p2186 \) (M_threshold 1, lower)
- \( p2183 \) (n_threshold 2) \( \rightarrow \) \( p2187 \) (M_threshold 2, upper), \( p2188 \) (M_threshold 2, lower)
- \( p2184 \) (n_threshold 3) \( \rightarrow \) \( p2189 \) (M_threshold 3, upper), \( p2190 \) (M_threshold 3, lower)

**Dependency:**
The following applies: \( p2182 < p2183 < p2184 \)

**Reference:** \( p2182, p2183, p2189, p2190 \)

### Parameter Description

**p2185[0...n]**  
**Load monitoring torque threshold 1, upper / M_thresh 1 upper**

- **Access level:** 3
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** U, T
- **Scaling:** -
- **Data set:** DDS, p0180
- **Units group:** 7_1
- **Unit selection:** p0505
- **Min:** 0.00 [Nm]
- **Max:** 20000000.00 [Nm]
- **Factory setting:** 10000000.00 [Nm]

**Description:**
Sets the speed/torque envelope curve for load monitoring.

**Dependency:**
The following applies: \( p2185 > p2186 \)

**Reference:** \( p2182, p2186 \)

### Parameter Description

**p2186[0...n]**  
**Load monitoring torque threshold 1, lower / M_thresh 1 lower**

- **Access level:** 3
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** U, T
- **Scaling:** -
- **Data set:** DDS, p0180
- **Units group:** 7_1
- **Unit selection:** p0505
- **Min:** 0.00 [Nm]
- **Max:** 20000000.00 [Nm]
- **Factory setting:** 0.00 [Nm]

**Description:**
Sets the speed/torque envelope curve for load monitoring.

**Dependency:**
The following applies: \( p2186 < p2185 \)

**Reference:** \( p2182, p2185 \)

### Parameter Description

**p2187[0...n]**  
**Load monitoring torque threshold 2, upper / M_thresh 2 upper**

- **Access level:** 3
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** U, T
- **Scaling:** -
- **Data set:** DDS, p0180
- **Units group:** 7_1
- **Unit selection:** p0505
- **Min:** 0.00 [Nm]
- **Max:** 20000000.00 [Nm]
- **Factory setting:** 10000000.00 [Nm]

**Description:**
Sets the speed/torque envelope curve for load monitoring.

**Dependency:**
The following applies: \( p2187 < p2188 \)

**Reference:** \( p2182, p2187, p2188 \)
### Parameters

#### Parameter list

**Dependency:**
- The following applies: \( p_{2187} > p_{2188} \)
- Refer to: p2183, p2188

**Note:**
- The upper envelope curve is defined by \( p_{2185}, p_{2187} \) and \( p_{2189} \).

<table>
<thead>
<tr>
<th><strong>p2188[0...n]</strong></th>
<th><strong>Load monitoring torque threshold 2, lower / M_thresh 2 lower</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the speed/torque envelope curve for load monitoring.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>The following applies: ( p_{2187} &lt; p_{2188} )</td>
</tr>
<tr>
<td><strong>Refer to:</strong></td>
<td>p2183, p2187</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The lower envelope curve is defined by ( p_{2186}, p_{2188} ) and ( p_{2190} ).</td>
</tr>
</tbody>
</table>

| **Access level:** | 3 |
| **Calculated:**  | - |
| **Can be changed:** | U, T |
| **Units group:** | 7_1 |
| **Min**          | 0.00 \([Nm]\) |
| **Max**          | 20000000.00 \([Nm]\) |
| **Data type:**   | FloatingPoint32 |
| **Data set:**    | DDS, p0180 |
| **Units group:** | 7_1 |
| **Unit selection:** | p0505 |
| **Factory setting:** | 0.00 \([Nm]\) |

**p2189[0...n]** **Load monitoring torque threshold 3, upper / M_thresh 3 upper**

| **Description:**  | Sets the speed/torque envelope curve for load monitoring.     |
| **Dependency:**   | The following applies: \( p_{2189} < p_{2190} \)             |
| **Refer to:**     | p2184, p2187                                                 |
| **Note:**         | The upper envelope curve is defined by \( p_{2185}, p_{2187} \) and \( p_{2189} \). |

| **Access level:** | 3 |
| **Calculated:**  | - |
| **Can be changed:** | U, T |
| **Units group:** | 7_1 |
| **Min**          | 0.00 \([Nm]\) |
| **Max**          | 20000000.00 \([Nm]\) |
| **Data type:**   | FloatingPoint32 |
| **Data set:**    | DDS, p0180 |
| **Units group:** | 7_1 |
| **Unit selection:** | p0505 |
| **Factory setting:** | 10000000.00 \([Nm]\) |

**p2190[0...n]** **Load monitoring torque threshold 3, lower / M_thresh 3 lower**

| **Description:**  | Sets the speed/torque envelope curve for load monitoring.     |
| **Dependency:**   | The following applies: \( p_{2190} < p_{2189} \)             |
| **Refer to:**     | p2184, p2189                                                 |
| **Note:**         | The lower envelope curve is defined by \( p_{2186}, p_{2188} \) and \( p_{2190} \). |

| **Access level:** | 3 |
| **Calculated:**  | - |
| **Can be changed:** | U, T |
| **Units group:** | 7_1 |
| **Min**          | 0.00 \([Nm]\) |
| **Max**          | 20000000.00 \([Nm]\) |
| **Data type:**   | FloatingPoint32 |
| **Data set:**    | DDS, p0180 |
| **Units group:** | - |
| **Unit selection:** | - |
| **Factory setting:** | 0.00 \([Nm]\) |

**p2192[0...n]** **Load monitoring delay time / Load monit t_del**

| **Description:**  | Sets the delay time to evaluate the load monitoring.         |

| **Access level:** | 3 |
| **Calculated:**  | - |
| **Can be changed:** | U, T |
| **Units group:** | - |
| **Min**          | 0.00 \([s]\) |
| **Max**          | 65.00 \([s]\) |
| **Data type:**   | FloatingPoint32 |
| **Data set:**    | DDS, p0180 |
| **Units group:** | - |
| **Unit selection:** | - |
| **Factory setting:** | 10.00 \([s]\) |
p2193[0...n]  Load monitoring configuration / Load monit config

Access level: 3  Calculated: -  Data type: Integer16
Can be changed: U, T  Scaling: -  Data set: DDS, p0180
Units group: -  Unit selection: -

Min  Max  Factory setting
0  3  1

Description: Sets the load monitoring configuration.
Value:
0: Monitoring switched out
1: Monitoring torque and load drop
2: Monitoring speed and load drop
3: Monitoring load drop

Dependency: Refer to: p2182, p2183, p2184, p2185, p2186, p2187, p2188, p2190, p2192, r2198, p3230, p3231, p3232
Refer to: A07920, A07921, A07922, F07923, F07924, F07925, F07936

p2194[0...n]  Torque threshold value 2 / M_thresh val 2

Access level: 3  Calculated: p0340 = 1,3,5  Data type: FloatingPoint32
Can be changed: U, T  Scaling: -  Data set: DDS, p0180
Units group: -  Unit selection: -

Min  Max  Factory setting
0.00 [%]  100.00 [%]  90.00 [%]

Description: Sets the torque threshold value for the message "Torque utilization < torque threshold value 2" (BO: r2199.11).
The message "torque setpoint < p2174" (BO: r2198.10) and "torque utilization < p2194" (BO: r2199.11) are only evaluated after the run-up and the delay time has expired.

Dependency: Refer to: r0033, p2195, r2199

p2195[0...n]  Torque utilization switch-off delay / M_util t_off

Access level: 3  Calculated: -  Data type: FloatingPoint32
Can be changed: U, T  Scaling: -  Data set: DDS, p0180
Units group: -  Unit selection: -

Min  Max  Factory setting
0.0 [ms]  1000.0 [ms]  800.0 [ms]

Description: Sets the switch-off delay time for the negated signal "run-up completed".
The message "torque setpoint < p2174" (BO: r2198.10) and "torque utilization < p2194" (BO: r2199.11) are only evaluated after the run-up and the delay time has expired.

Dependency: Refer to: p2174, p2194

p2196[0...n]  Torque utilization scaling / M_util scal

Access level: 1  Calculated: -  Data type: FloatingPoint32
Can be changed: C(1, 3), U, T  Scaling: -  Data set: DDS, p0180
Units group: -  Unit selection: -

Min  Max  Factory setting
0.00 [%]  1000.00 [%]  100.00 [%]

Description: Sets the scaling factor for torque utilization (r0033).

r2197.0...13  CO/BO: Status word monitoring 1 / ZSW monitor 1

Access level: 3  Calculated: -  Data type: Unsigned16
Can be changed: -  Scaling: -  Data set: -
Units group: -  Unit selection: -

Min  Max  Factory setting
-  -  -

Description: Displays the first status word for monitoring functions.
### Parameters

#### Parameter list

**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>[n_act] &lt;= n_min p1080</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>01</td>
<td>[n_act] &lt;= speed threshold value 2 p2155</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
</tr>
<tr>
<td>02</td>
<td>[n_act] &gt; speed threshold value 2 p2155</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
</tr>
<tr>
<td>03</td>
<td>n_act &gt;= 0</td>
<td>Yes</td>
<td>No</td>
<td>8011</td>
</tr>
<tr>
<td>04</td>
<td>[n_act] &gt;= n_set</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>05</td>
<td>[n_act] &lt;= n_standstill p1226</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>06</td>
<td>[n_act] &gt; n_max</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
</tr>
<tr>
<td>07</td>
<td>Speed setp - act val deviation in tolerance t_off</td>
<td>Yes</td>
<td>No</td>
<td>8011</td>
</tr>
<tr>
<td>08</td>
<td>[n_act] &gt;= l_threshold value p2170</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>09</td>
<td>Vdc_act &lt;= Vdc_threshold value p2172</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>10</td>
<td>Vdc_act &gt; Vdc_threshold value p2172</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>11</td>
<td>Output load is not present</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>12</td>
<td>[n_act] &gt; n_max (delayed)</td>
<td>Yes</td>
<td>No</td>
<td>8021</td>
</tr>
<tr>
<td>13</td>
<td>[n_act] &gt; n_max (F07901)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notice:**

Re bit 06:

When the overspeed is reached, this bit is set and F07901 output immediately following this. The bit is canceled again as soon as the next pulse inhibit is present.

**Note:**

Re bit 00:

The threshold value is set in p1080 and the hysteresis in p2150.

Re bit 01, 02:

The threshold value is set in p2155 and the hysteresis in p2140.

Re bit 03:

1 signal: direction of rotation positive.

0 signal: direction of rotation negative.

The hysteresis is set in p2150.

Re bit 04:

The threshold value is set in r1119 and the hysteresis in p2150.

Re bit 05:

The threshold value is set in p1266 and the delay time in p1228.

Re bit 06:

The hysteresis is set in p2162.

Re bit 07:

The threshold value is set in p2163 and the hysteresis is set in p2164.

Re bit 08:

The threshold value is set in p2170 and the delay time in p2171.

Re bit 09, 10:

The threshold value is set in p2172 and the delay time in p2173.

Re bit 11:

The threshold value is set in p2179 and the delay time in p2180.

Re bit 12:

The threshold value is set in p2182, the hysteresis in p2162, and the delay time (for canceling the signal) in p2152.

Re bit 13:

Only for internal Siemens use.

---

**r2198.0…13**

**CO/BO: Status word monitoring 2 / ZSW monitor 2**

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned16
- **Can be changed:** -
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** -

**Description:** Displays the second status word for monitoring functions.
**Parameters**

### Parameter list

<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>[n_act] &lt;= speed threshold value 5</td>
<td>Yes</td>
<td>No</td>
<td>8021</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>[n_act] &gt; speed threshold value 5</td>
<td>Yes</td>
<td>No</td>
<td>8021</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>[n_act] &lt;= speed threshold value 6</td>
<td>Yes</td>
<td>No</td>
<td>8021</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>[n_act] &gt; speed threshold value 6</td>
<td>Yes</td>
<td>No</td>
<td>8021</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>[n_set] &lt; p2161</td>
<td>Yes</td>
<td>No</td>
<td>8011</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>n_set &gt; 0</td>
<td>Yes</td>
<td>No</td>
<td>8011</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Motor blocked</td>
<td>Yes</td>
<td>No</td>
<td>8012</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Motor stalled</td>
<td>Yes</td>
<td>No</td>
<td>8012</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>[l_act] &lt; [l_threshold value p2170]</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>[M_act] &gt; torque threshold value 1 and n_set reached</td>
<td>Yes</td>
<td>No</td>
<td>8021</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>[M_set] &lt; torque threshold value 1</td>
<td>Yes</td>
<td>No</td>
<td>8012</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Load monitoring signals an alarm</td>
<td>Yes</td>
<td>No</td>
<td>8013</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Load monitoring signals a fault condition</td>
<td>Yes</td>
<td>No</td>
<td>8013</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>[M_act] &gt; torque threshold value 1</td>
<td>Yes</td>
<td>No</td>
<td>8021</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- Re bit 10: The torque threshold value 1 is set in p2174.
- Re bit 12: This bit is reset after the fault cause disappears, even if the fault itself is still present.

### r2199.0...11

**CO/BO: Status word monitoring 3 / ZSW monitor 3**

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned16
- **Can be changed:** -
- **Scaling:** -
- **Unit group:** -
- **Unit selection:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

**Description:** Displays the third status word for monitoring functions.

<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>[n_act] &lt; speed threshold value 3</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>f or n comparison value reached or exceeded</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Speed setp - act val deviation in tolerance exceeded</td>
<td>Yes</td>
<td>No</td>
<td>8011</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Ramp-up/ramp-down completed</td>
<td>Yes</td>
<td>No</td>
<td>8011</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Torque utilization &lt; torque threshold value 2</td>
<td>Yes</td>
<td>No</td>
<td>8012</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- Re bit 00: The speed threshold value 3 is set in p2161.
- Re bit 01: The comparison value is set in p2141. We recommend setting the hysteresis (p2142) for canceling the bit to a value lower than that in p2141. Otherwise, the bit is not reset.
- Re bit 11: The torque threshold value 2 is set in p2194.

### p2200[0...n]

**BI: Technology controller enable / Tec_ctrl enable**

- **Access level:** 2
- **Calculated:** -
- **Data type:** U32 / Binary
- **Can be changed:** T
- **Scaling:** -
- **Data set:** CDS, p0170
- **Units group:** -
- **Unit selection:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

**Description:**
- Sets the signal source to switch in/switch out the technology controller.
- The technology controller is switched in with a 1 signal.
**Parameters**

**Parameter list**

---

**p2201[0...n]**  
**CO: Technology controller, fixed value 1 / Tec_ctrl fix val1**

- **Access level:** 2  
- **Can be changed:** U, T  
- **Units group:** 9_1  
- **Calculated:** -  
- **Scaling:** PERCENT  
- **Data type:** FloatingPoint32  
- **Data set:** DDS, p0180  
- **Unit selection:** p0595

**Description:** Sets the value for fixed value 1 of the technology controller.

**Dependency:** Refer to: p2220, p2221, p2222, p2223, r2224, r2229

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

---

**p2202[0...n]**  
**CO: Technology controller, fixed value 2 / Tec_ctr fix val 2**

- **Access level:** 2  
- **Can be changed:** U, T  
- **Units group:** 9_1  
- **Calculated:** -  
- **Scaling:** PERCENT  
- **Data type:** FloatingPoint32  
- **Data set:** DDS, p0180  
- **Unit selection:** p0595

**Description:** Sets the value for fixed value 2 of the technology controller.

**Dependency:** Refer to: p2220, p2221, p2222, p2223, r2224, r2229

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

---

**p2203[0...n]**  
**CO: Technology controller, fixed value 3 / Tec_ctr fix val 3**

- **Access level:** 2  
- **Can be changed:** U, T  
- **Units group:** 9_1  
- **Calculated:** -  
- **Scaling:** PERCENT  
- **Data type:** FloatingPoint32  
- **Data set:** DDS, p0180  
- **Unit selection:** p0595

**Description:** Sets the value for fixed value 3 of the technology controller.

**Dependency:** Refer to: p2220, p2221, p2222, p2223, r2224, r2229

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

---

**p2204[0...n]**  
**CO: Technology controller, fixed value 4 / Tec_ctr fix val 4**

- **Access level:** 2  
- **Can be changed:** U, T  
- **Units group:** 9_1  
- **Calculated:** -  
- **Scaling:** PERCENT  
- **Data type:** FloatingPoint32  
- **Data set:** DDS, p0180  
- **Unit selection:** p0595

**Description:** Sets the value for fixed value 4 of the technology controller.

**Dependency:** Refer to: p2220, p2221, p2222, p2223, r2224, r2229

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

---

**p2205[0...n]**  
**CO: Technology controller, fixed value 5 / Tec_ctr fix val 5**

- **Access level:** 2  
- **Can be changed:** U, T  
- **Units group:** 9_1  
- **Calculated:** -  
- **Scaling:** PERCENT  
- **Data type:** FloatingPoint32  
- **Data set:** DDS, p0180  
- **Unit selection:** p0595

**Description:** Sets the value for fixed value 5 of the technology controller.

**Dependency:** Refer to: p2220, p2221, p2222, p2223, r2224, r2229

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.
**p2206[0...n]**  
**CO: Technology controller, fixed value 6 / Tec_ctr fix val 6**

- **Access level:** 2  
- **Calculated:** -  
- **Data type:** FloatingPoint32  
- **Can be changed:** U, T  
- **Scaling:** PERCENT  
- **Data set:** DDS, p0180  
- **Units group:** 9_1  
- **Unit selection:** p0595  
- **Min:** -200.00 [%]  
- **Max:** 200.00 [%]  
- **Factory setting:** 60.00 [%]

**Description:** Sets the value for fixed value 6 of the technology controller.

**Dependency:** Refer to: p2220, p2227, p2222, p2223, r2224, r2229

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

---

**p2207[0...n]**  
**CO: Technology controller, fixed value 7 / Tec_ctr fix val 7**

- **Access level:** 2  
- **Calculated:** -  
- **Data type:** FloatingPoint32  
- **Can be changed:** U, T  
- **Scaling:** PERCENT  
- **Data set:** DDS, p0180  
- **Units group:** 9_1  
- **Unit selection:** p0595  
- **Min:** -200.00 [%]  
- **Max:** 200.00 [%]  
- **Factory setting:** 70.00 [%]

**Description:** Sets the value for fixed value 7 of the technology controller.

**Dependency:** Refer to: p2220, p2222, p2227, p2223, r2224, r2229

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

---

**p2208[0...n]**  
**CO: Technology controller, fixed value 8 / Tec_ctr fix val 8**

- **Access level:** 2  
- **Calculated:** -  
- **Data type:** FloatingPoint32  
- **Can be changed:** U, T  
- **Scaling:** PERCENT  
- **Data set:** DDS, p0180  
- **Units group:** 9_1  
- **Unit selection:** p0595  
- **Min:** -200.00 [%]  
- **Max:** 200.00 [%]  
- **Factory setting:** 80.00 [%]

**Description:** Sets the value for fixed value 8 of the technology controller.

**Dependency:** Refer to: p2220, p2222, p2227, p2223, r2224, r2229

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

---

**p2209[0...n]**  
**CO: Technology controller, fixed value 9 / Tec_ctr fix val 9**

- **Access level:** 2  
- **Calculated:** -  
- **Data type:** FloatingPoint32  
- **Can be changed:** U, T  
- **Scaling:** PERCENT  
- **Data set:** DDS, p0180  
- **Units group:** 9_1  
- **Unit selection:** p0595  
- **Min:** -200.00 [%]  
- **Max:** 200.00 [%]  
- **Factory setting:** 90.00 [%]

**Description:** Sets the value for fixed value 9 of the technology controller.

**Dependency:** Refer to: p2220, p2222, p2227, p2223, r2224, r2229

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

---

**p2210[0...n]**  
**CO: Technology controller, fixed value 10 / Tec_ctr fix val 10**

- **Access level:** 2  
- **Calculated:** -  
- **Data type:** FloatingPoint32  
- **Can be changed:** U, T  
- **Scaling:** PERCENT  
- **Data set:** DDS, p0180  
- **Units group:** 9_1  
- **Unit selection:** p0595  
- **Min:** -200.00 [%]  
- **Max:** 200.00 [%]  
- **Factory setting:** 100.00 [%]

**Description:** Sets the value for fixed value 10 of the technology controller.

**Dependency:** Refer to: p2220, p2227, p2222, p2223, r2224, r2229

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.
**Parameters**

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2211[0...n]</td>
<td>CO: Technology controller, fixed value 11 / Tec_ctr fix val 11</td>
<td>Sets the value for fixed value 11 of the technology controller.</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>p2212[0...n]</td>
<td>CO: Technology controller, fixed value 12 / Tec_ctr fix val 12</td>
<td>Sets the value for fixed value 12 of the technology controller.</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
<tr>
<td>p2213[0...n]</td>
<td>CO: Technology controller, fixed value 13 / Tec_ctr fix val 13</td>
<td>Sets the value for fixed value 13 of the technology controller.</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
<tr>
<td>p2214[0...n]</td>
<td>CO: Technology controller, fixed value 14 / Tec_ctr fix val 14</td>
<td>Sets the value for fixed value 14 of the technology controller.</td>
<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>p2215[0...n]</td>
<td>CO: Technology controller, fixed value 15 / Tec_ctr fix val 15</td>
<td>Sets the value for fixed value 15 of the technology controller.</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
</tbody>
</table>
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**Parameter list**

#### Parameters

<table>
<thead>
<tr>
<th><strong>p2216[0...n]</strong></th>
<th><strong>Technology controller fixed value selection method / Tec_ctrl FixVal sel</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the method to select the fixed setpoints.</td>
</tr>
<tr>
<td><strong>Value:</strong></td>
<td>1: Direct selection 2: Binary selection</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p2220[0...n]</strong></th>
<th><strong>BI: Technology controller fixed value selection bit 0 / Tec_ctrl sel bit 0</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source to select the fixed value of the technology controller.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p2221, p2222, p2223</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p2221[0...n]</strong></th>
<th><strong>BI: Technology controller fixed value selection bit 1 / Tec_ctrl sel bit 1</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source to select the fixed value of the technology controller.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p2220, p2222, p2223</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p2222[0...n]</strong></th>
<th><strong>BI: Technology controller fixed value selection bit 2 / Tec_ctrl sel bit 2</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source to select the fixed value of the technology controller.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p2220, p2221, p2223</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p2223[0...n]</strong></th>
<th><strong>BI: Technology controller fixed value selection bit 3 / Tec_ctrl sel bit 3</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source to select the fixed value of the technology controller.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p2220, p2221, p2222</td>
</tr>
</tbody>
</table>
**Parameters**

**Parameter list**

---

**r2224**

**CO: Technology controller, fixed value effective / Tec_ctr FixVal eff**

- **Access level:** 3
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** -
- **Scaling:** PERCENT
- **Units group:** 9_1
- **Unit selection:** p0595
- **Min:** - [%]
- **Max:** - [%]
- **Factory setting:** - [%]

**Description:**
Displays the selected and effective fixed value of the technology controller.

**Dependency:**
Refer to: r2229

---

**r2225.0**

**CO/BO: Technology controller fixed value selection status word / Tec_ctr FixVal ZSW**

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned16
- **Can be changed:** -
- **Scaling:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** -

**Description:**
Displays the status word for the fixed value selection 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 fixed value selected</td>
<td>Yes</td>
<td>No</td>
<td>7950, 7951</td>
</tr>
</tbody>
</table>

---

**r2229**

**Technology controller number actual / Tec_ctrl No. act**

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** -
- **Scaling:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** -

**Description:**
Displays the number of the selected fixed setpoint of the technology controller.

**Dependency:**
Refer to: r2224

---

**p2230[0...n]**

**Technology controller motorized potentiometer configuration / Tec_ctr mop config**

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** U, T
- **Scaling:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** 0000 0100 bin

**Description:**
Sets the configuration for the motorized potentiometer 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>Data save active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Initial rounding-off active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Non-volatile data save active for p2230.0 = 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Ramp-function generator always active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r2231, p2240

**Notice:**
For p0014 = 1, 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:**
Re bit 00:
0: The setpoint for the motorized potentiometer is not saved and after ON is entered using p2240.
1: The setpoint for the motorized potentiometer is saved and after ON is entered using r2231. In order to save in a non-volatile fashion, bit 03 should be set to 1.
Re bit 02:
0: Without initial rounding-off
1: With initial rounding-off.

The selected ramp-up/down time is correspondingly exceeded. The initial rounding-off is a sensitive way of specifying small changes (progressive reaction when keys are pressed). The jerk for initial rounding is independent of the ramp-up time and only depends on the selected maximum value (p2237).

It is calculated as follows:

\[ r = 0.0001 \times \max(p2237, |p2238|) \times \% / 0.13^2 \times \text{s}^2 \]

The jerk is effective until the maximum acceleration is reached (\(a_{\text{max}} = p2237 \times \% / p2247 \times \text{s}\) or \(a_{\text{max}} = p2238 \times \% / p2248 \times \text{s}\), after which the drive continues to run linearly with constant acceleration. The higher the maximum acceleration (the lower that p2247 is), the longer the ramp-up time increases with respect to the set ramp-up time.

Re bit 03:
0: Non-volatile data save de-activated.
1: The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for p2230.0 = 1).

Re bit 04:
When the bit is set, the ramp-function generator is computed independent of the pulse enable. The actual output value of the motorized potentiometer is always in r2250.

---

**Technology controller motorized potentiometer setpoint memory / Tec_ctrl mop mem**

<table>
<thead>
<tr>
<th><strong>Parameter</strong></th>
<th><strong>Description</strong></th>
<th><strong>Dependency</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r2231</strong></td>
<td>Technology controller motorized potentiometer setpoint memory / Tec_ctrl mop mem</td>
<td></td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>9_1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>- [%]</td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the setpoint memory for the motorized potentiometer of the technology controller.

For p2230.0 = 1, the last setpoint that was saved is entered after ON.

Dependency: Refer to: p2230

---

**Technology controller motorized potentiometer raise setpoint / Tec_ctrl mop raise**

<table>
<thead>
<tr>
<th><strong>Parameter</strong></th>
<th><strong>Description</strong></th>
<th><strong>Dependency</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2235[0...n]</strong></td>
<td>BI: Technology controller motorized potentiometer raise setpoint / Tec_ctrl mop raise</td>
<td></td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>T</td>
<td></td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the signal source to continually increase the setpoint for the motorized potentiometer of the technology controller.

The setpoint change (CO: r2250) depends on the set ramp-up time (p2247) and the duration of the signal that is present (BI: r2235).

Dependency: Refer to: p2236

---

**Technology controller motorized potentiometer lower setpoint / Tec_ctrl mop lower**

<table>
<thead>
<tr>
<th><strong>Parameter</strong></th>
<th><strong>Description</strong></th>
<th><strong>Dependency</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2236[0...n]</strong></td>
<td>BI: Technology controller motorized potentiometer lower setpoint / Tec_ctrl mop lower</td>
<td></td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>T</td>
<td></td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the signal source to continually reduce the setpoint for the motorized potentiometer of the technology controller.

The setpoint change (CO: r2250) depends on the set ramp-down time (p2248) and the duration of the signal that is present (BI: p2236).

Dependency: Refer to: p2235
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2237[0...n]</td>
<td>Technology controller motorized potentiometer maximum value / Tec_ctrl mop max</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>DDS, p0180</td>
<td>9_1</td>
<td>p0595</td>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td>100.00 [%]</td>
</tr>
<tr>
<td>p2238[0...n]</td>
<td>Technology controller motorized potentiometer minimum value / Tec_ctrl mop min</td>
<td>2</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>DDS, p0180</td>
<td>9_1</td>
<td>p0595</td>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td>-100.00 [%]</td>
</tr>
<tr>
<td>p2240[0...n]</td>
<td>Technology controller motorized potentiometer starting value / Tec_ctrl mop start</td>
<td>2</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>DDS, p0180</td>
<td>9_1</td>
<td>p0595</td>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td>0.00 [%]</td>
</tr>
<tr>
<td>r2245</td>
<td>CO: Technology controller mot. potentiometer setpoint before RFG / Tec_ctr mop befRFG</td>
<td>2</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>PERCENT</td>
<td>-</td>
<td>9_1</td>
<td>p0595</td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
<tr>
<td>p2247[0...n]</td>
<td>Technology controller motorized potentiometer ramp-up time / Tec_ctrl mop t_r-up</td>
<td>2</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>DDS, p0180</td>
<td>-</td>
<td>-</td>
<td>0.00 [s]</td>
<td>1000.00 [s]</td>
<td>10.0 [s]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the maximum value for the motorized potentiometer of the technology controller.

Dependency:
Refer to: p2237

**Description:**
Sets the minimum value for the motorized potentiometer of the technology controller.

Dependency:
Refer to: p2237

**Description:**
Sets the starting value for the motorized potentiometer of the technology controller.
For p2230.0 = 0, this setpoint is entered after ON.

Dependency:
Refer to: p2230

**Description:**
Sets the effective setpoint in front of the internal motorized potentiometer ramp-function generator of the technology controller.

Dependency:
Refer to: r2250

**Description:**
Sets the ramp-up time for the internal ramp-function generator for the motorized potentiometer of the technology controller.

Dependency:
Refer to: p2248

**Note:**
The time is referred to 100 %.
When the initial rounding-off is activated (p2230.2 = 1) the ramp-up is correspondingly extended.
### Parameter List

#### p2248[0...n] Technology controller motorized potentiometer ramp-down time / Tec_ctrMop t_rdown

| Access level: 2 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: U, T | Scaling: - | Data set: DDS, p0180 |
| Units group: - | Unit selection: - |
| Min | Max | Factory setting |
| 0.0 [s] | 1000.0 [s] | 10.0 [s] |

**Description:** Sets the ramp-down time for the internal ramp-function generator for the motorized potentiometer of the technology controller.

**Dependency:** Refer to: p2247

**Note:** The time is referred to 100 %. When the initial rounding-off is activated (p2230.2 = 1) the ramp-down is correspondingly extended.

#### r2250 CO: Technology controller motorized potentiometer setpoint after RFG / Tec_ctr mop aftRFG

| Access level: 2 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: - | Scaling: PERCENT | Data set: - |
| Units group: 9_1 | Unit selection: p0595 |
| Min | Max | Factory setting |
| - [%] | - [%] | - [%] |

**Description:** Displays the effective setpoint after the internal ramp-function generator for the motorized potentiometer of the technology controller.

**Dependency:** Refer to: r2245

#### p2251 Technology controller mode / Tec_ctrl mode

| Access level: 3 | Calculated: - | Data type: Integer16 |
| Can be changed: T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |
| Min | Max | Factory setting |
| 0 | 1 | 0 |

**Description:** Sets the mode for using the technology controller output.

**Value:**
- 0: Technology controller as main speed setpoint
- 1: Technology controller as supplementary speed setpoint

**Dependency:** p2251 = 0, 1 is only effective if the enable signal of the technology controller is interconnected (p2200 > 0).

#### p2253[0...n] CI: Technology controller setpoint 1 / Tec_ctrl setp 1

| Access level: 2 | Calculated: - | Data type: U32 / FloatingPoint32 |
| Can be changed: U, T | Scaling: PERCENT | Data set: CDS, p0170 |
| Units group: - | Unit selection: - |
| Min | Max | Factory setting |
| - | - | 0 |

**Description:** Sets the signal source for the setpoint 1 of the technology controller.

**Dependency:** Refer to: p2254, p2255
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Data type</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2254[n...m]</td>
<td>CI: Technology controller setpoint 2 / Tec_ctrl setp 2</td>
<td>Sets the signal source for the setpoint 2 of the technology controller.</td>
<td>U32 / FloatingPoint32</td>
<td>0</td>
</tr>
<tr>
<td>p2255</td>
<td>Technology controller setpoint 1 scaling / Tec_ctrl set1 scal</td>
<td>Sets the scaling for the setpoint 1 of the technology controller.</td>
<td>FloatingPoint32</td>
<td>100.00 [%]</td>
</tr>
<tr>
<td>p2256</td>
<td>Technology controller setpoint 2 scaling / Tec_ctrl set2 scal</td>
<td>Sets the scaling for the setpoint 2 of the technology controller.</td>
<td>FloatingPoint32</td>
<td>100.00 [%]</td>
</tr>
<tr>
<td>p2257</td>
<td>Technology controller, ramp-up time / Tec_ctrl t_ramp-up</td>
<td>Sets the ramp-up time of the technology controller.</td>
<td>FloatingPoint32</td>
<td>1.00 [s]</td>
</tr>
<tr>
<td>p2258</td>
<td>Technology controller ramp-down time / Tec_ctrl t_ramp-dn</td>
<td>Sets the ramp-down time of the technology controller.</td>
<td>FloatingPoint32</td>
<td>1.00 [s]</td>
</tr>
</tbody>
</table>

**Access level:** 3
**Can be changed:** U, T
**Units group:** -
**Description:**

**Note:**
- The ramp-up time is referred to 100 %.
- The ramp-down time is referred to 100 %.
**Parameters**

**Parameter list**

---

**r2260**  
**CO: Technology controller setpoint after ramp-function generator / Tec_ctr set aftRFG**

- **Access level:** 2  
- **Can be changed:** -  
- **Units group:** 9_1  
- **Min:** - [%]  
- **Max:** - [%]  
- **Factory setting:** - [%]  

**Description:** Sets the setpoint after the ramp-function generator of the technology controller.

---

**p2261**  
**Technology controller setpoint filter time constant / Tec_ctrl set T**

- **Access level:** 3  
- **Can be changed:** U, T  
- **Units group:** -  
- **Min:** 0.000 [s]  
- **Max:** 60.000 [s]  
- **Factory setting:** 0.000 [s]  

**Description:** Sets the time constant for the setpoint filter (PT1) of the technology controller.

---

**r2262**  
**CO: Technology controller setpoint after filter / Tec_ctr set aftFlt**

- **Access level:** 4  
- **Can be changed:** -  
- **Units group:** 9_1  
- **Min:** - [%]  
- **Max:** - [%]  
- **Factory setting:** - [%]  

**Description:** Displays the smoothed setpoint after the setpoint filter (PT1) of the technology controller.

---

**p2263**  
**Technology controller type / Tec_ctrl type**

- **Access level:** 3  
- **Can be changed:** T  
- **Units group:** -  
- **Min:** 0  
- **Max:** 1  
- **Factory setting:** 0  

**Description:** Sets the technology controller type.

**Value:**  
0: D component in the actual value signal  
1: D component in the fault signal

---

**p2264[0...n]**  
**CI: Technology controller actual value / Tec_ctrl act val**

- **Access level:** 2  
- **Can be changed:** U, T  
- **Units group:** -  
- **Min:** -  
- **Max:** -  
- **Factory setting:** 0  

**Description:** Sets the signal source for the actual value of the technology controller.

---

**p2265**  
**Technology controller actual value filter time constant / Tec_ctrl act T**

- **Access level:** 2  
- **Can be changed:** U, T  
- **Units group:** -  
- **Min:** 0.000 [s]  
- **Max:** 60.000 [s]  
- **Factory setting:** 0.000 [s]  

**Description:** Sets the time constant for the actual value filter (PT1) of the technology controller.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r2266</strong></td>
<td><strong>CO: Technology controller actual value after filter / Tec_ctr act aftFlt</strong></td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>PERCENT</td>
<td>-</td>
<td>p0595</td>
</tr>
<tr>
<td>Min</td>
<td>Displays the smoothed actual value after the filter (PT1) of the technology controller.</td>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Notice: If the actual value exceeds this upper limit, this results in fault F07426.</td>
<td>- [%]</td>
<td>100.00 [%]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **p2267** | **Technology controller upper limit actual value / Tec_ctrl u_lim act** | 3 | - | FloatingPoint32 | U, T | PERCENT | - | p0595 |
| Min | Sets the upper limit for the actual value signal of the technology controller. | -200.00 [%] | 200.00 [%] | Factory setting |
| Max | Notice: If the actual value exceeds this upper limit, this results in fault F07426. | - [%] | 100.00 [%] |

| **p2268** | **Technology controller lower limit actual value / Tec_ctrl l_lim act** | 3 | - | FloatingPoint32 | U, T | PERCENT | - | p0595 |
| Min | Sets the lower limit for the actual value signal of the technology controller. | -200.00 [%] | 200.00 [%] | Factory setting |
| Max | Notice: If the actual value falls below this lower limit, this results in fault F07426. | - [%] | -100.00 [%] |

| **p2269** | **Technology controller gain actual value / Tech_ctrl gain act** | 3 | - | FloatingPoint32 | U, T | - | - | - |
| Min | Sets the scaling factor for the actual value of the technology controller. | 0.00 [%] | 500.00 [%] | Factory setting |
| Max | Note: For 100%, the actual value is not changed. | 0 [%] | 100.00 [%] |

| **p2270** | **Technology controller actual value function / Tec_ctr ActVal fct** | 3 | - | Integer16 | U, T | - | - | - |
| Min | Setting to use an arithmetic function for the actual value signal of the technology controller. | 0 | 0 | Factory setting |
| Max | Value: | 3 | 0 |

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Parameter list

2: Square function \(x \times x\)
3: Cube function \(x \times x \times x\)

Dependency:
Refer to: p2264, p2265, p2267, p2268, p2269, p2271

**p2271 Technology controller actual value inversion (sensor type) / Tech_ctrl act inv**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>Scaling:</td>
<td>Data set:</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</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>

**Description:**
Setting to invert the actual value signal of the technology controller.
The inversion depends on the sensor type for the actual value signal.

**Value:**
- 0: No inversion
- 1: Inversion actual value signal

**Caution:**
If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

**Note:**
The correct setting can be determined as follows:
- inhibit the technology controller (p2200 = 0).
- increase the motor speed and in so doing, measure the actual value signal of the technology controller.
  --> If the actual value increases as the motor speed increases, then p2271 should be set to 0 (no inversion).
  --> If the actual value decreases as the motor speed increases, then p2271 should be set to 1 (the actual value signal is inverted).

**r2272 CO: Technology controller actual value scaled / Tech_ctrl act scal**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>Scaling:</td>
<td>Data set:</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>p0595</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

**Description:**
Displays the scaled actual value signal of the technology controller.

**Dependency:**
Refer to: p2264, p2265, r2266, p2267, p2268, p2269, p2270, p2271

**r2273 CO: Technology controller error / Tec_ctrl error**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>Scaling:</td>
<td>Data set:</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>p0595</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

**Description:**
Displays the error (system deviation) between the setpoint and actual value of the technology controller.

**Dependency:**
Refer to: p2263

**p2274 Technology controller differentiation, time constant / Tec_ctrl D comp T**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>Scaling:</td>
<td>Data set:</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.000 [s]</td>
<td>60.000 [s]</td>
<td>0.000 [s]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the time constant for the differentiation (D component) of the technology controller.

**Note:**
p2274 = 0: Differentiation is disabled.
**Parameters**

**Parameter list**

### p2280 Technology controller proportional gain / Tec_ctrl Kp
- **Access level:** 2
- **Can be changed:** U, T
- **Units group:** -
- **Min:** 0.000
- **Max:** 1000.000

**Description:** Sets the proportional gain (P component) of the technology controller.
**Note:** p2280 = 0: The proportional gain is disabled.

### p2285 Technology controller integral time / Tec_ctrl Tn
- **Access level:** 2
- **Can be changed:** U, T
- **Units group:** -
- **Min:** 0.000 [s]
- **Max:** 10000.000 [s]

**Description:** Sets the integral time (I component, integrating time constant) of the technology controller.
**Notice:** The following applies for p2251 = 0:
If the output of the technology controller lies within the range of a suppression (skip) bandwidth (p1091 ... p1094, p1101) or below the minimum speed (p1080), the integral component of the controller is held so that the controller temporarily works as a P controller. This is necessary in order to prevent the controller from behaving in an unstable manner, as the ramp-function generator switches to the parameterized up and down ramps (p1120, p1121) at the same time in order to avoid setpoint steps. This state can be exited or avoided by changing the controller setpoint or by using the start speed (= minimum speed).
**Note:** When the controller output reaches the limit, the I component of the controller is held.
- p2285 = 0:
  The integral time is disabled and the I component of the controller is reset.

### p2286[0...n] BI: Hold technology controller integrator / Tec_ctr integ stop
- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -
- **Max:** -

**Description:** Sets the signal source to hold the integrator for the technology controller.

### p2289[0...n] CI: Technology controller pre-control signal / Tec_ctrl prectrl
- **Access level:** 3
- **Can be changed:** U, T
- **Units group:** -
- **Min:** -
- **Max:** -

**Description:** Sets the signal source for the pre-control signal of the technology controller.

### p2291 CO: Technology controller maximum limiting / Tec_ctrl max_lim
- **Access level:** 3
- **Can be changed:** U, T
- **Units group:** -
- **Min:** -200.00 [%]
- **Max:** 200.00 [%]

**Description:** Sets the maximum limit of the technology controller.
**Dependency:** Refer to: p2292
### Caution:
The maximum limit must always be greater than the minimum limit (p2291 > p2292).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2292</strong></td>
<td>Technology controller minimum limiting / Tec_ctrl min_lim</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>-200.00 [%] 200.00 [%] 0.00 [%]</td>
</tr>
<tr>
<td><strong>p2293</strong></td>
<td>Technology controller ramp-up/ramp-down time / Tec_ctr ramp up/dn</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>0.00 [s] 100.00 [s] 1.00 [s]</td>
</tr>
<tr>
<td><strong>r2294</strong></td>
<td>Technology controller output signal / Tec_ctrl outp_sig</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>- [%] - [%] - [%]</td>
</tr>
<tr>
<td><strong>p2295</strong></td>
<td>Technology controller output scaling / Tec_ctrl outp scal</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>-100.00 [%] 100.00 [%] 100.00 [%]</td>
</tr>
<tr>
<td><strong>p2296[0...n]</strong></td>
<td>Technology controller output scaling / Tec_ctrl outp scal</td>
<td>3</td>
<td>U32 / FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Note:
The time refers to the set maximum and minimum limits (p2291, p2292).
### Parameters

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2297[0...n]</strong></td>
<td>CI: Technology controller maximum limit signal source / Tec_ctrMaxLimS_src</td>
<td>Refer to: p2295</td>
<td>In order that the output of the technology controller does not exceed the maximum speed limit, its upper limit p2297 should be connected to the actual maximum speed r1084. In mode p2251 = 1, p2299 must also be connected to the output of the ramp-function generator r1150.</td>
</tr>
<tr>
<td><strong>p2298[0...n]</strong></td>
<td>CI: Technology controller minimum limit signal source / Tec_ctrMinLimS_src</td>
<td>Refer to: p2292</td>
<td>If the technology controller is rotated in a negative direction in mode p2251 = 0, its lower limit p2298 should be connected to the actual minimum speed r1087. In mode p2251 = 1, p2299 must also be connected to the output of the ramp-function generator r1150.</td>
</tr>
<tr>
<td><strong>p2299[0...n]</strong></td>
<td>CI: Technology controller limit offset / Tech_ctrLimOffs</td>
<td></td>
<td>In mode p2251 = 1, p2299 must be connected to the output of the ramp-function generator r1150 so that the technology controller stops when the speed limits are reached (see also p2297, p2298).</td>
</tr>
<tr>
<td><strong>p2302</strong></td>
<td>Technology controller output signal starting value / Tec_ctrStartVal</td>
<td></td>
<td>If the drive is switched on and the technology controller is already enabled (see p2200, r0056.3), then it's output signal r2294 first goes to the start value p2302, before the controller starts to operate. The starting value is only effective in the mode &quot;technology controller as main speed setpoint&quot; (p2251 = 0).</td>
</tr>
</tbody>
</table>

**Parameter Details**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Description</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2297[0...n]</td>
<td>3</td>
<td>U, T</td>
<td>-</td>
<td>CI: Technology controller maximum limit signal source / Tec_ctrMaxLimS_src</td>
<td>-1084[0]</td>
</tr>
<tr>
<td>p2298[0...n]</td>
<td>3</td>
<td>U, T</td>
<td>-</td>
<td>CI: Technology controller minimum limit signal source / Tec_ctrMinLimS_src</td>
<td>-1087[0]</td>
</tr>
<tr>
<td>p2299[0...n]</td>
<td>3</td>
<td>U, T</td>
<td>-</td>
<td>CI: Technology controller limit offset / Tech_ctrLimOffs</td>
<td>0</td>
</tr>
<tr>
<td>p2302</td>
<td>3</td>
<td>U, T</td>
<td>-</td>
<td>Technology controller output signal starting value / Tec_ctrStartVal</td>
<td>0.00 [%] 200.00 [%] 0.00 [%]</td>
</tr>
</tbody>
</table>
If fault F07426 "technology controller actual value limited" occurs while ramping up to the starting value and if the associated reaction has been set to "NONE" (see p2100, p2101), the starting value is kept as the speed setpoint instead of a switch to closed-loop control operation.

### p2306 Technology controller fault signal inversion / Tec_ctrl fault inv

| Access level: | 3 |
| Can be changed: | T |
| Units group: | - |
| Min | 0 |
| Max | 1 |
| Factory setting | 0 |

**Description:** Setting to invert the fault signal of the technology controller. The setting depends on the type of control loop.

**Value:**
- 0: No inversion
- 1: Inversion

**Caution:** If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

**Note:**
- The correct setting can be determined as follows:
  - inhibit the technology controller (p2200 = 0).
  - increase the motor speed and in so doing, measure the actual value signal (of the technology controller).
  - if the actual value increases with increasing motor speed, then the inversion should be switched out.
  - if the actual value decreases with increasing motor speed, then the inversion should be set.
- If value = 0:
  - The drive reduces the output speed when the actual value rises (e.g. for heating fans, intake pump, compressor).
- If value = 1:
  - The drive increases the output speed when the actual value increases (e.g. for cooling fans, discharge pumps).

### r2344 CO: Technology controller last speed setpoint (smoothed) / Tec_ctrl n_setp_sm

| Access level: | 3 |
| Can be changed: | - |
| Units group: | - |
| Min | - [%] |
| Max | - [%] |
| Factory setting | - [%] |

**Description:** Displays the smoothed speed setpoint of the technology controller prior to switching to operation with fault response (see p2345).

**Dependency:** Refer to: p2345

**Note:** The smoothing time is 10 s.

### p2345 Technology controller fault response / Tech_ctrl flt resp

| Access level: | 3 |
| Can be changed: | U, T |
| Units group: | - |
| Min | 0 |
| Max | 2 |
| Factory setting | 0 |

**Description:** Sets the response of the technology controller to the occurrence of a fault F07426 (technology controller actual value limited). The fault response is executed if status bits 8 or 9 in technology controller status word r2349 are set. If both status bits are zero, a switch back to technology controller operation will follow.

**Value:**
- 0: Function inhibited
- 1: On fault: Changeover to r2344 (or p2302)
- 2: On fault: Changeover to p2215
Parameters

Parameter list

Dependency: The parameterized fault response is only effective if the technology controller mode is set to p2251 = 0 (technology controller as main setpoint).
Refer to: p2267, p2268, r2344
Refer to: F07426

Notice: Dependent upon the application, the changing over of the setpoint when fault F07426 occurs can lead to the fault condition disappearing and the re-activation of the technology controller. This can repeat itself and cause limit oscillations. In this case a suitable fault response or a different fixed setpoint 15 for the fault response p2345 = 2 should be selected.
Refer to: p2267, p2268, r2344
Refer to: F07426

Note: The parameterized fault response can only be achieved if the default fault response of the technology controller fault F07426 is set to "NONE" (see p2100, p2101). If a fault response other than "NONE" is entered in p2101 for F07426, p2345 must be set to zero.
If the fault occurs during ramping up to the starting setpoint p2302, this starting setpoint is retained as the final value (there is no changeover to the fault response setpoint).

r2349.0...12 CO/BO: Technology controller status word / Tec_ctrl status

| Access level: 3 | Calculated: - | Data type: Unsigned32 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |

Min | Max | Factory setting
- | - | -

Description: Displays the status word of the technology controller.

Bit field: Bit | Signal name | 1 signal | 0 signal | FP
00 | Technology controller de-activated | Yes | No | -
01 | Technology controller limited | Yes | No | -
02 | Technology controller, motorized potentiometer limited max. | Yes | No | -
03 | Technology controller, motorized potentiometer limited min. | Yes | No | -
04 | Technology controller speed setpoint total in setpoint channel | Yes | No | -
05 | Technology controller RFG bypassed in the setpoint channel | Yes | No | -
06 | Technology controller starting value at the current limit | No | Yes | -
08 | Technology controller actual value at the minimum | Yes | No | -
09 | Technology controller actual value at the maximum | Yes | No | -
10 | Technology controller output at the minimum | Yes | No | -
11 | Technology controller output at the maximum | Yes | No | -
12 | Fault response active | Yes | No | -

p2900[0...n] CO: Fixed value 1 [%] / Fixed value 1 [%]

| Access level: 3 | Calculated: - | Data type: FloatingPoint32 |
| Can be changed: U, T | Scaling: PERCENT | Data set: DDS, p0180 |
| Units group: - | Unit selection: - |

Min | Max | Factory setting
-10000.00 [%] | 10000.00 [%] | 0.00 [%]

Description: Sets a fixed percentage.

Dependency: Refer to: p2901, p2930

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can be used to interconnect a scaling function (e.g. scaling of the main setpoint)
### Parameter List

#### p2901[0...n]  
**CO: Fixed value 2 [%] / Fixed value 2 [%]**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets a fixed percentage.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency:</td>
<td>Refer to: p2900, p2930</td>
</tr>
<tr>
<td>Notice:</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>Note:</td>
<td>The value can be used to interconnect a scaling function (e.g. scaling of the supplementary setpoint)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>Fixed value +0 %</td>
</tr>
<tr>
<td>[1]</td>
<td>Fixed value +5 %</td>
</tr>
<tr>
<td>[2]</td>
<td>Fixed value +10 %</td>
</tr>
<tr>
<td>[3]</td>
<td>Fixed value +20 %</td>
</tr>
<tr>
<td>[4]</td>
<td>Fixed value +50 %</td>
</tr>
<tr>
<td>[5]</td>
<td>Fixed value +100 %</td>
</tr>
<tr>
<td>[6]</td>
<td>Fixed value +150 %</td>
</tr>
<tr>
<td>[7]</td>
<td>Fixed value +200 %</td>
</tr>
<tr>
<td>[8]</td>
<td>Fixed value -5 %</td>
</tr>
<tr>
<td>[9]</td>
<td>Fixed value -10 %</td>
</tr>
<tr>
<td>[10]</td>
<td>Fixed value -20 %</td>
</tr>
<tr>
<td>[12]</td>
<td>Fixed value -100 %</td>
</tr>
<tr>
<td>[13]</td>
<td>Fixed value -150 %</td>
</tr>
<tr>
<td>[14]</td>
<td>Fixed value -200 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10000.00 [%]</td>
<td>10000.00 [%]</td>
<td>0.00 [%]</td>
</tr>
</tbody>
</table>

#### p2902[0...14]  
**CO: Fixed values [%] / Fixed values [%]**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Signal sources for frequently used percentage values.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index:</td>
<td>[0] = Fixed value +0 %</td>
</tr>
<tr>
<td></td>
<td>[1] = Fixed value +5 %</td>
</tr>
<tr>
<td></td>
<td>[2] = Fixed value +10 %</td>
</tr>
<tr>
<td></td>
<td>[3] = Fixed value +20 %</td>
</tr>
<tr>
<td></td>
<td>[4] = Fixed value +50 %</td>
</tr>
<tr>
<td></td>
<td>[5] = Fixed value +100 %</td>
</tr>
<tr>
<td></td>
<td>[6] = Fixed value +150 %</td>
</tr>
<tr>
<td></td>
<td>[7] = Fixed value +200 %</td>
</tr>
<tr>
<td></td>
<td>[8] = Fixed value -5 %</td>
</tr>
<tr>
<td></td>
<td>[9] = Fixed value -10 %</td>
</tr>
<tr>
<td></td>
<td>[10] = Fixed value -20 %</td>
</tr>
<tr>
<td></td>
<td>[12] = Fixed value -100 %</td>
</tr>
<tr>
<td></td>
<td>[13] = Fixed value -150 %</td>
</tr>
<tr>
<td></td>
<td>[14] = Fixed value -200 %</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>

#### p2930[0...n]  
**CO: Fixed value M [Nm] / Fixed value M [Nm]**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets a fixed value for torque.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency:</td>
<td>Refer to: p2900, p2930</td>
</tr>
<tr>
<td>Notice:</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>Note:</td>
<td>The value can, for example, be used to interconnect a supplementary torque.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-100000.00 [Nm]</td>
<td>100000.00 [Nm]</td>
<td>0.00 [Nm]</td>
</tr>
</tbody>
</table>
**Parameters**

**Parameter list**

### p3110

**External fault 3, power-up delay / Ext fault 3 t_on**

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned16
- **Can be changed:** U, T
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** 0 [ms]
- **Max:** 1000 [ms]
- **Factory setting:** 0 [ms]

**Description:** Sets the delay time for external fault 3.

**Dependency:**
- Refer to: p2108, p3111, p3112
- Refer to: F07862

### p3111[n...n]

**BI: External fault 3, enable / Ext fault 3 enab**

- **Access level:** 3
- **Calculated:** -
- **Data type:** U32 / Binary
- **Can be changed:** U, T
- **Scaling:** -
- **Data set:** CDS, p0170
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** 1

**Description:** Sets the signal source for the enable signal of external fault 3.

External fault 3 is initiated by the following AND logic operation:
- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

**Dependency:**
- Refer to: p2108, p3110, p3112
- Refer to: F07862

### p3112[n...n]

**BI: External fault 3 enable negated / Ext flt 3 enab neg**

- **Access level:** 3
- **Calculated:** -
- **Data type:** U32 / Binary
- **Can be changed:** U, T
- **Scaling:** -
- **Data set:** CDS, p0170
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** 0

**Description:** Sets the signal source for the negated enable signal of external fault 3.

External fault 3 is initiated by the following AND logic operation:
- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

**Dependency:**
- Refer to: p2108, p3110, p3111
- Refer to: F07862

### r3113.0...15

**CO/BO: NAMUR message bit bar / NAMUR bit bar**

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned16
- **Can be changed:** -
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- Min
- Max
- **Factory setting**

**Description:** Displays the status of NAMUR signal bit bar.

The faults or alarms are assigned to the appropriate signaling/message classes and influence a specific message bit.
### 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 drive converter data 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>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>

### r3131 CO: Actual flt value / Actual flt value

- **Access level:** 3
- **Calculated:** -
- **Data type:** Integer32
- **Can be changed:** -
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** -

**Description:** Displays the fault value of the oldest active fault.

**Dependency:** Refer to: r2131, r3132

### r3132 CO: Actual component number / Act comp_no.

- **Access level:** 3
- **Calculated:** -
- **Data type:** Integer32
- **Can be changed:** -
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** -

**Description:** Displays the component number of the oldest fault that is still active.

**Dependency:** Refer to: r2131, r3131

### p3230[0...n] CI: Load monitoring, speed actual value / Load monit n_act

- **Access level:** 3
- **Calculated:** -
- **Data type:** U32 / FloatingPoint32
- **Can be changed:** T
- **Scaling:** p2000
- **Data set:** CDS, p0170
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** 0

**Description:** Sets the signal source for the speed actual value of the load monitoring.

**Dependency:** Refer to: r2169, p2181, p2192, p2193, p3231

**Note:** Refer to: A07920, A07921, A07922, F07923, F07924, F07925

**Dependancy:** The parameter is only effective for p2193 = 2.

### p3231[0...n] Load monitoring speed deviation / Load monit n_dev

- **Access level:** 3
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** U, T
- **Scaling:** -
- **Data set:** DDS, p0180
- **Units group:** 3_1
- **Unit selection:** p0505
- **Min:** 0.00 [rpm]
- **Max:** 210000.00 [rpm]
- **Factory setting:** 150.00 [rpm]

**Description:** Sets the permissible speed deviation during load monitoring (for p2193 = 2).

**Dependency:** Refer to: r2169, p2181, p2193, p3230

**Dependancy:** Refer to: A07920, A07921, A07922, F07923, F07924, F07925
**Parameters**

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p3232[0...n]</strong></td>
<td>BI: Load monitoring failure detection / Load_mon fail_det</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: U32 / Binary</td>
<td></td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: CDS, p0170</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</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>1</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source for detecting a failure.</td>
<td>Refer to: p2192, p2193</td>
<td>Monitoring is triggered with a 0 signal, as soon as the time in p2192 has expired.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: F07936</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p3233[0...n]</strong></td>
<td>Torque actual value filter, time constant / M_act_filt T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0 [ms]</td>
<td>1000000 [ms]</td>
<td>100 [ms]</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the time constant for the PT1 element to smooth the torque actual value.</td>
<td>The smoothed torque actual value is compared with the threshold values and is only used for messages and signals.</td>
<td></td>
</tr>
<tr>
<td><strong>p3235</strong></td>
<td>Phase failure signal motor monitoring time / Ph_fail t_monit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 4</td>
<td>Calculated: -</td>
<td>Data type: FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0 [ms]</td>
<td>2000 [ms]</td>
<td>320 [ms]</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the monitoring time for phase failure detection of the motor.</td>
<td>After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.</td>
<td>For p3235 = 0 the function is deactivated. The monitoring is automatically de-activated during the flying restart operation for a motor that is still rotating. 3-phase phase failures cannot be detected and are indicated by other messages (e.g. F07902).</td>
</tr>
<tr>
<td><strong>p3320[0...n]</strong></td>
<td>Fluid flow machine power point 1 / Fluid_mach P1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 2</td>
<td>Calculated: -</td>
<td>Data type: FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00</td>
<td>25.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.</td>
<td>This parameter specifies the power (P) of point 1 as a [%]. The characteristic comprises the following value pairs: Power (P) / speed (n) p3320 / p3321 --&gt; point 1 (P1 / n1) p3322 / p3323 --&gt; point 2 (P2 / n2) p3324 / p3325 --&gt; point 3 (P3 / n3) p3326 / p3327 --&gt; point 4 (P4 / n4) p3328 / p3329 --&gt; point 5 (P5 / n5)</td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: r0041, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3328, p3329</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Note: The reference value for power and speed is the rated power/rated speed. The energy saved is displayed in r0041.

**p3321[0...n]** Fluid flow machine speed point 1 / Fluid_mach n1

| Description: | For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required. This parameter specifies the speed (n) of point 1 as a [%]. The characteristic comprises the following value pairs:
<table>
<thead>
<tr>
<th>Power (P) / speed (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3320 / p3321 → point 1 (P1 / n1)</td>
</tr>
<tr>
<td>p3322 / p3323 → point 2 (P2 / n2)</td>
</tr>
<tr>
<td>p3324 / p3325 → point 3 (P3 / n3)</td>
</tr>
<tr>
<td>p3326 / p3327 → point 4 (P4 / n4)</td>
</tr>
<tr>
<td>p3328 / p3329 → point 5 (P5 / n5)</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r0041, p3320, p3322, p3323, p3324, p3325, p3326, p3327, p3328, p3329

**Note:** The reference value for power and speed is the rated power/rated speed. The energy saved is displayed in r0041.

**p3322[0...n]** Fluid flow machine power point 2 / Fluid_mach P2

| Description: | For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required. This parameter specifies the power (P) of point 2 as a [%].

**Dependency:** Refer to: r0041, p3320, p3321, p3323, p3324, p3325, p3326, p3327, p3328, p3329

**Note:** The reference value for power and speed is the rated power/rated speed. The energy saved is displayed in r0041.

**p3323[0...n]** Fluid flow machine speed point 2 / Fluid_mach n2

| Description: | For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required. This parameter specifies the speed (n) of point 2 as a [%].

**Dependency:** Refer to: r0041, p3320, p3321, p3322, p3324, p3325, p3326, p3327, p3328, p3329

**Note:** The reference value for power and speed is the rated power/rated speed. The energy saved is displayed in r0041.
### Description:
For the energy-saving display of a fluid-flow machine, a typical flow characteristic $P = f(n)$ with 5 points along the characteristic is required.

This parameter specifies the power ($P$) of point 3 as a [%].

#### Dependency:
Refer to: r0041, p3320, p3321, p3322, p3323, p3325, p3326, p3327, p3328, p3329

#### Note:
The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

### p3324[0...n]
#### Fluid flow machine power point 3 / Fluid_mach P3
<table>
<thead>
<tr>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min 0.00</td>
<td>Max 100.00</td>
<td>Factory setting 77.00</td>
</tr>
</tbody>
</table>

### p3325[0...n]
#### Fluid flow machine speed point 3 / Fluid_mach n3
<table>
<thead>
<tr>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min 0.00</td>
<td>Max 100.00</td>
<td>Factory setting 50.00</td>
</tr>
</tbody>
</table>

### p3326[0...n]
#### Fluid flow machine power point 4 / Fluid_mach P4
<table>
<thead>
<tr>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min 0.00</td>
<td>Max 100.00</td>
<td>Factory setting 92.00</td>
</tr>
</tbody>
</table>

### p3327[0...n]
#### Fluid flow machine speed point 4 / Fluid_mach n4
<table>
<thead>
<tr>
<th>Access level: 2</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: DDS, p0180</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min 0.00</td>
<td>Max 100.00</td>
<td>Factory setting 75.00</td>
</tr>
</tbody>
</table>

### Description:
For the energy-saving display of a fluid-flow machine, a typical flow characteristic $P = f(n)$ with 5 points along the characteristic is required.

This parameter specifies the power ($P$) of point 4 as a [%].

#### Dependency:
Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3327, p3328, p3329

#### Note:
The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.
### Description:
For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required.

This parameter specifies the power (\( P \)) of point 5 as a [%].

**Dependency:**
Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3329

**Note:**
The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

### Description:
For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required.

This parameter specifies the speed (\( n \)) of point 5 as a [%].

**Dependency:**
Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3328

**Note:**
The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

### Parameter list

#### p3328[0...n] Fluid flow machine power point 5 / Fluid_mach P5
- **Access level:** 2
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** U, T
- **Scaling:** -
- **Units group:** -
- **Data set:** DDS, p0180
- **Min:** 0.00
- **Max:** 100.00
- **Factory setting:** 100.00

**Description:**
For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required.

This parameter specifies the power (\( P \)) of point 5 as a [%].

**Dependency:**
Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3328, p3329

**Note:**
The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

#### p3329[0...n] Fluid flow machine speed point 5 / Fluid_mach n5
- **Access level:** 2
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** U, T
- **Scaling:** -
- **Units group:** -
- **Data set:** DDS, p0180
- **Min:** 0.00
- **Max:** 100.00
- **Factory setting:** 100.00

**Description:**
For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required.

This parameter specifies the speed (\( n \)) of point 5 as a [%].

**Dependency:**
Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3328

**Note:**
The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

#### p3330[0...n] BI: 2/3 wire control command 1 / 2/3 wire cmd 1
- **Access level:** 3
- **Calculated:** -
- **Data type:** U32 / Binary
- **Can be changed:** U, T
- **Scaling:** -
- **Units group:** -
- **Data set:** CDS, p0170
- **Min:** -
- **Max:** -
- **Factory setting:** 0

**Description:**
Sets the signal source for command 1 for the two-wire control/three-wire control.

**Dependency:**
Refer to: p0015, p3331, p3332, r3333, p3334

**Note:**
The mode of operation of this binector input is dependent on the wire control set in p0015.

#### p3331[0...n] BI: 2/3 wire control command 2 / 2/3 wire cmd 2
- **Access level:** 3
- **Calculated:** -
- **Data type:** U32 / Binary
- **Can be changed:** U, T
- **Scaling:** -
- **Units group:** -
- **Data set:** CDS, p0170
- **Min:** -
- **Max:** -
- **Factory setting:** 0

**Description:**
Sets the signal source for command 2 for the two-wire control/three-wire control.

**Dependency:**
Refer to: p0015, p3330, p3332, r3333, p3334

**Note:**
The mode of operation of this binector input is dependent on the wire control set in p0015.
### Parameter list

#### p3332[0...n]  
**BI: 2/3 wire control command 3 / 2/3 wire cmd 3**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</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 command 3 for the two-wire control/three-wire control.

**Dependency:** Refer to: p0015, p3330, p3331, r3333, p3334

**Note:** The mode of operation of this binector input is dependent on the wire control set in p0015.

#### r3333.0...3  
**CO/BO: 2/3 wire control control word / 2/3 wire STW**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</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 control word for the two wire control/three wire control.

The control signals are dependent on the wire control set in p0015 and the signal states at the digital inputs.

**Dependency:** Refer to: p0015, p3330, p3331, p3332, p3334

#### p3334  
**2/3 wire control selection / 2/3 wire select**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</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>4</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the two wire control/three wire control.

**Value:**
0: No wire control
1: Two wire control clockwise/counterclockwise 1
2: Two wire control clockwise/counterclockwise 2
3: Three wire control enable clockwise/counterclockwise
4: Three wire control enable ON/reversing

**Dependency:** Refer to: p0015, p3330, p3331, p3332, r3333

**Note:** This value depends on the wire control set in p0015.

#### p3856[0...n]  
**Compound braking current / Compound I_brake**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Scaling:</td>
<td>PERCENT</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [%]</td>
<td>250.00 [%]</td>
<td>0.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Compound braking current is used to define the amount of DC current that is produced on stopping the motor during U/f operation to further increase the DC brake function.

Compound braking is a superimposition of the DC brake function with regenerative braking (net braking along the ramp) after OFF1 or OFF3. This permits braking with controlled motor frequency and minimum power input into the motor. Effective braking without using additional hardware components is obtained by optimizing the ramp down time and compound braking.
Dependency:
The compound braking current is only activated if the DC link voltage exceeds the threshold value in r1282.

- when DC braking is active (refer to p1230, r1239)
- as long as the motor is not magnetized (e.g. for flying restart)
- for vector control (p1300 >= 20)
- for synchronous motors (p0300 = 2xx)

Caution:
Generally, increasing the braking current improves the braking effect when stopping the motor. However, if the value is set too high, then the drive can be tripped (shut down) as a result of overcurrent or ground fault.

Recommendation: p3856 < 100 % x (r0209 - r0331) / p0305 / 2

Compound braking generates a current in the motor with a ripple manifesting the rotational frequency. The higher the braking current is set, the higher the resulting ripple, especially when the Vdc(max) control is simultaneously active (refer to p1280).

Note:
The parameter value is entered relative to the rated motor current (p0305). Compound braking is deactivated with p3856 = 0%.

**r3859.0**

**CO/BO: Compound braking status word / Compound Br ZSW**

<table>
<thead>
<tr>
<th>PM240</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</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 status word of the compound braking.

<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>Compound braking active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Dependency:
Refer to: p3856

**p3900**

**Completion of quick commissioning / Compl quick_comm**

<table>
<thead>
<tr>
<th>PM240</th>
<th>Access level: 1</th>
<th>Calculated: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C(1)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></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:
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.
p3900 = 1 initially includes a parameter reset (factory setting, the same as p0970 = 1) for all parameters of the drive object; however, without overwriting the entries made during the quick commissioning.

The interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p15 and p1500 are re-established and all of the dependent motor, open-loop and control-loop control parameters are calculated (corresponding to p0340 = 1).
p3900 = 2 includes the restoration of the interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p15 and p1500 and the calculations corresponding to p0340 = 1.
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
1: Quick parameterization after parameter reset
2: Quick parameterization (only) for BICO and motor parameters
3: Quick parameterization for motor parameters (only)

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

Note:
When the calculations have been completed, p3900 and p0010 are automatically reset to a value of 0.

When calculating motor, open-loop and closed-loop control parameters (such as for p0340 = 1) parameters associated with a selected Siemens catalog motor are not overwritten.
If a catalog motor has not been selected (see p0300), then the following parameters are reset with p3900 > 0 in order to restore the situation that applied when commissioning the drive for the first time:
induction motor: p0320, p0352, p0362 ... p0369, p0604, p0605, p0626 ... p0628
synchronous motor: p0326, p0327, p0352, p0604, p0605

### r3925[0...n] Identification final display / Ident final disp

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Motor/control parameters calculated (p0340 = 1)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Motor data identification carried out at standstill (p1910 = 1)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Rotating measurement carried out (p1960 = 1, 2)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Motor equivalent circuit diagram parameters changed</td>
<td>Changed</td>
<td>Not changed</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** The individual bits are only set if the appropriate action has been initiated and successfully completed. When motor rating plate parameters are changed, the final display is reset. When setting the individual bits, all of the most significant bits are reset.

### r3926[0...n] Voltage generation alternating base voltage amplitude / U_gen altern base

Displays the base voltage for the alternating voltage in the context of motor data identification.

- **0:** No alternating voltages. The function is de-activated.
- **<0:** Automatic determination of the base voltage and wobbluation / self-setting based on the converter and the connected motor.
- **Otherwise:** Base voltage for alternating current generation in volts (wobbluation active).

### r3927[0...n] Motor data identification control word / MotID STW

Successfully completed component of the last motor data identification carried out.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>05 Determine Tr and Lsig evaluation in the time range</td>
<td>Successfully completed component of the last rotating measurement carried out.</td>
<td>3</td>
<td>p0340 = 1</td>
<td>Unsigned16</td>
<td>-</td>
<td>-</td>
<td>DDS, p0180</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06 Activate vibration damping</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>
<tr>
<td>07 De-activate vibration detection</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>11 De-activate pulse measurement Lq Ld</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 De-activate rotor resistance Rr measurement</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>14 De-activate valve interlocking time measurement</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 Determine only stator resistance, valve voltage fault, dead time</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>16 Short motor identification (lower quality)</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>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: r3925</td>
<td>Note:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>00 Wobble U_generate to determine dead-time correction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>01 Wobble U_generate to determine stator resistance</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>02 Wobble U_generate to determine rotor time constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>03 Wobble U_generate to determine leakage inductance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04 Wobble U_generate to determine dynamic leakage inductance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>05 Wobble U_generate to determine magnetizing inductance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>08 Alternating U_generate to determine dead-time correction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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SINAMICS G120 CU240B/E-2 Control Units List Manual (LH11), 01/2012
Parameters

Parameter list

09 Alternating U_generate to determine stator resistance
10 Alternating U_generate to determine rotor time constant
11 Alternating U_generate to determine leakage inductance
12 Alternating U_generate to determine dynamic leakage inductance
13 Alternating U_generate to determine magnetizing inductance

r3930[0...4] Power unit EEPROM characteristics / PU characteristics
Access level: 3
Can be changed: -
Units group: -
Min -
Max -
Description: Displays the characteristics (A5E number and versions) of the power unit.
[0]: A5E number xxxx (A5Exxxxyyyy)
[1]: A5E number yyyy (A5Exxxxyyyy)
[2]: File version (logistic)
[3]: File version (fixed data)
[4]: File version (calib data)

p3950 Service parameter / Serv. par.
Access level: 3
Can be changed: C, U, T
Units group: -
Min -
Max -
Description: For service personnel only.

r3960[0...1] Control Unit temperature measured / CU temp measured
CU240E-2
CU240E-2_DP
CU240E-2_DP_F
CU240E-2_F
CU240E-2_PN_F
CU240E-2 PN
Access level: 3
Can be changed: -
Units group: -
Min - [°C]
Max - [°C]
Description: Displays the measured Control Unit temperature.
An appropriate message is output when 87 °C is exceeded.
Index:
[0] = Actual measured value
[1] = Maximum measured value
Dependency: Refer to: A01009
Note: The value of -200 indicates that there is no measuring signal.
Re r3960[0]: Displays the currently measured Control Unit temperature.
Re r3960[1]: Displays the highest measured Control Unit temperature. This value is saved on the module in a non-volatile fashion.
### r3974 Drive unit status word / Drv_unit ZSW

<p>| Description | Displays the status word for the drive unit. |</p>
<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>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>
</tbody>
</table>

### r3978 BICO CounterDevice / BICO CounterDevice

| Description | Displays the counter reading for modified BICO interconnections on this device. The counter is incremented by one for each modified BICO interconnection. |
| Bit field | Bit | Signal name | 1 signal | 0 signal | |
|---|---|---|---|---|
| 02 | Writing of parameters disabled as macro is running | Yes | No | - | |

### p3981 Faults, acknowledge drive object / Faults ackn DO

| Description | Setting to acknowledge all active faults of a drive object. Safety messages cannot be acknowledged using this parameter. After acknowledgement, the parameter is automatically reset to 0. |

### p3985 Master control mode selection / PcCtrl mode select

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the mode to change over the master control / LOCAL mode. When changing the master control in operation, the drive can manifest undesirable behavior - e.g. it can accelerate up to another setpoint.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>0: Change master control for STW1.0 = 0 1: Change master control in operation</td>
</tr>
</tbody>
</table>

---

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SINAMICS G120 CU240B/E-2 Control Units List Manual (LH11), 01/2012

1-317
### Parameter list

**r3986 Parameter count / Parameter No.**

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the number of parameters for this drive unit.
The number comprises the device-specific and the drive-specific parameters.

**Dependency:**
Refer to: r0980, r0981, r0989

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

**r3988[0...1] Boot state / Boot_state**

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>-</td>
<td>Integer16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Min** | **Max** | **Factory setting**
---|---|---
0 | 800 | -

**Description:**

- **Index 0:** Displays the boot state.
  - 0: Not active
  - 1: Fatal fault
  - 10: Fault
  - 20: Reset all parameters
  - 30: Drive object modified
  - 40: Download using commissioning software
  - 50: Parameter download using commissioning software
  - 90: Reset Control Unit
  - 100: Start initialization
  - 101: Only for internal Siemens use
  - 110: Instantiate Control Unit basis
  - 111: Insert drive object
  - 112: Only for internal Siemens use
  - 113: Only for internal Siemens use
  - 114: Only for internal Siemens use
  - 115: Parameter download using commissioning software
  - 117: Only for internal Siemens use
  - 150: Wait until Power Module is determined
  - 160: Evaluate Power Module
  - 170: Instantiate Control Unit reset
  - 180: Only for internal Siemens use
  - 200: First commissioning
  - 210: Create drive packages
  - 250: Wait for fault acknowledge
  - 325: Wait for input of drive type
  - 350: Determine drive type
  - 360: Only for internal Siemens use
  - 370: Wait until p0010 is set to 0
  - 380: Only for internal Siemens use
  - 550: Call conversion functions for parameter
  - 625: Wait for non-cyclic start
  - 650: Start cyclic operation
  - 660: Evaluate drive commissioning status
  - 670: Only for internal Siemens use
  - 680: Only for internal Siemens use
  - 690: Wait for non-cyclic start
  - 700: Save parameters

**Value:**

- 0: Not active
- 1: Fatal fault
- 10: Fault
- 20: Reset all parameters
- 30: Drive object modified
- 40: Download using commissioning software
- 50: Parameter download using commissioning software
- 90: Reset Control Unit
- 100: Start initialization
- 101: Only for internal Siemens use
- 110: Instantiate Control Unit basis
- 111: Insert drive object
- 112: Only for internal Siemens use
- 113: Only for internal Siemens use
- 114: Only for internal Siemens use
- 115: Parameter download using commissioning software
- 117: Only for internal Siemens use
- 150: Wait until Power Module is determined
- 160: Evaluate Power Module
- 170: Instantiate Control Unit reset
- 180: Only for internal Siemens use
- 200: First commissioning
- 210: Create drive packages
- 250: Wait for fault acknowledge
- 325: Wait for input of drive type
- 350: Determine drive type
- 360: Only for internal Siemens use
- 370: Wait until p0010 is set to 0
- 380: Only for internal Siemens use
- 550: Call conversion functions for parameter
- 625: Wait for non-cyclic start
- 650: Start cyclic operation
- 660: Evaluate drive commissioning status
- 670: Only for internal Siemens use
- 680: Only for internal Siemens use
- 690: Wait for non-cyclic start
- 700: Save parameters
725:  Wait for cyclic
740:  Check the ability to operate
745:  Start cyclic calculations
750:  Interrupt enable
800:  Initialization finished

Index:
[0] = System
[1] = Partial boot

### r3996[0...1] Parameter write inhibit status / Par_write inhib st

| Access level: | 3 | Calculated: | - | Data type: Unsigned8 |
| Can be changed: | - | Scaling: | - | Data set: - |
| Units group: | - | Unit selection: | - |

**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.

### r5600 Pe energy saving mode ID / Pe mode ID

| CU240E-2_PN | Access level: | 3 | Calculated: | - | Data type: Integer16 |
| Can be changed: | - | Scaling: | - | Data set: - |
| Units group: | - | Unit selection: | - |

**Description:**
Displays the PROFIenergy mode ID of the effective energy saving mode.

**Value:**
0: POWER OFF
2: En-saving mode 2
255: Ready

**Note:**
Pe: PROFIenergy profiles

### p5602[0...1] Pe energy-saving mode pause time minimal / Pe mod t_pause min

| CU240E-2_PN | Access level: | 3 | Calculated: | - | Data type: Unsigned32 |
| Can be changed: | T | Scaling: | - | Data set: - |
| Units group: | - | Unit selection: | - |

**Description:**
Sets the minimum possible pause time for the energy-saving mode.
The value is the sum of the following times:
- Energy-saving mode transition time
- Operating state transition time
- Energy-saving mode, dwell time minimal

**Index:**
[0] = Reserved
[1] = Mode 2

**Note:**
It is not permissible that the value is less than the sum of the "energy-saving mode transition time" and the "operating state transition time" (system properties).
Pe: PROFIenergy profiles
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p5606[0...1]</td>
<td>Pe energy-saving mode dwell time maximum / Pe t_dwell max</td>
<td></td>
<td>Sets the maximum dwell time for the energy-saving mode.</td>
</tr>
<tr>
<td>p5611</td>
<td>Pe energy-saving properties general / Pe properties gen</td>
<td></td>
<td>Sets the general properties for energy-saving.</td>
</tr>
<tr>
<td>p5612[0...1]</td>
<td>Pe energy-saving properties mode-dependent / Pe properties mod</td>
<td></td>
<td>Sets the mode-dependent properties for energy-saving.</td>
</tr>
<tr>
<td>r5613.0...1</td>
<td>CO/BO: Pe energy-saving active/inactive / Pe save act/inact</td>
<td></td>
<td>Display and binector output for the state display PROFIenergy energy saving active or inactive.</td>
</tr>
</tbody>
</table>

**p5606[0...1] Pe energy-saving mode dwell time maximum / Pe t_dwell max**

- **CU240E-2_PN_F**
- **CU240E-2 PN**
- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** T
- **Scaling:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** 0 [ms]
- **Max:** 4294967295 [ms]
- **Factory setting:** 4294967295 [ms]
- **Description:** Sets the maximum dwell time for the energy-saving mode.
- **Index:** [0] = Reserved
- **[1] = Mode 2**
- **Note:** Pe: PROFIenergy profiles

**p5611 Pe energy-saving properties general / Pe properties gen**

- **CU240E-2_PN_F**
- **CU240E-2 PN**
- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** T
- **Scaling:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** 0000 bin
- **Description:** Sets the general properties for energy-saving.
- **Bit field:**
  - **Bit Signal name 1 signal 0 signal FP**
  - 00 Inhibit PROFIenergy Yes No -
  - 01 Drive initiates OFF1 Yes No -
  - 02 Trans into energy-saving mode from PRO-FIdrive state S4 poss Yes No -
- **Note:** Pe: PROFIenergy profiles

**p5612[0...1] Pe energy-saving properties mode-dependent / Pe properties mod**

- **CU240E-2_PN_F**
- **CU240E-2 PN**
- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** T
- **Scaling:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:**
  - [0] 0110 bin
  - [1] 0000 bin
- **Description:** Sets the mode-dependent properties for energy-saving.
- **Index:** [0] = Reserved
- **[1] = Mode 2**
- **Note:** Pe: PROFIenergy profiles

**r5613.0...1 CO/BO: Pe energy-saving active/inactive / Pe save act/inact**

- **CU240E-2_PN_F**
- **CU240E-2 PN**
- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned8
- **Can be changed:** -
- **Scaling:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting**
- **Description:** Display and binector output for the state display PROFIenergy energy saving active or inactive.
- **Bit field:**
  - **Bit Signal name 1 signal 0 signal FP**
  - 00 Pe active Yes No -
  - 01 Pe inactive Yes No -
- **Note:** Bit 0 and bit 1 are inverse of one another.
  Pe: PROFIenergy profiles
### Parameter List

#### p5614  **Bl: Pe set switch-on inhibit signal source / Pe sw on_inh s_src**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>U32 / Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**Description:**
Sets the signal source to set in the PROFIdrive state S1 "switching-on inhibit".

**Dependency:**
Refer to: r5613

**Note:**
Pe: PROFIdrive profiles

#### r7758[0...19]  **KHP Control Unit serial number / KHP CU ser_no**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>Unsigned8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**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**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>Unsigned8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**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**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type:</th>
<th>Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**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>
</tbody>
</table>
Parameters

Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>Know-how protection cannot be deactivated</td>
<td>Yes</td>
<td>3</td>
<td>-</td>
<td>Integer16</td>
<td>U, T</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Memory card copy protection active</td>
<td>Yes</td>
<td>3</td>
<td>-</td>
<td>Integer16</td>
<td>U, T</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependency:
Refer to: p7761, p7765, p7766, p7767, p7768

Notice:
For SIMOTION D410-2 these bits have no significance (they are always 0).

Note:
KHP: Know-How Protection
Re bit 00:
Write protection can be activated/deactivated via p7761 on the Control Unit.
Re bit 01:
The know-how protection can be activated by entering a password (p7766 ... p7768).
Re bit 02:
If it has already been activated, know-how protection can be temporarily deactivated by entering the valid password in p7766. In this case, bit 1 = 0 and bit 2 = 1 offset.
Re bit 03:
Know-how protection cannot be deactivated, as p7766 is not entered in the OEM exception list (only the factory setting is possible). This bit is only set if know-how protection is active (bit 1 = 1) and p7766 has not been entered in the OEM exception list.
Re bit 04:
When know-how protection has been activated, the contents of the memory card (parameter and DCC data) can be additionally protected against being used with other memory cards. This bit is only set if know-how protection is active and p7765 = 1.

p7761 Write protection / Write protection

Access level: 3
Can be changed: U, T
Units group: -

Value:
0: Deactivate write protection
1: Activate write protection

Description:
Setting for activating/deactivating the write protection for adjustable parameters.

Dependency:
Refer to: r7760

Note:
The following parameters are excluded from the write protection:
p0003, p0971, p3950, p3981, p7761, p9400

p7762 Write protection multi-master fieldbus system access behavior / Fieldbus acc_behav

Access level: 3
Can be changed: U, T
Units group: -

Value:
0: Write access independent of p7761
1: Write access dependent on p7761

Description:
Sets the behavior for write protection when accessing via multi-master fieldbus systems (e.g. CAN, BACnet).

Dependency:
Refer to: r7760, p7761
### Parameter List

**p7763**  
**KHP OEM exception list number of indices for p7764 / KHP OEM qty p7764**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>1</td>
<td>500</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the number of parameters for the OEM exception list (p7764[0...n]).

**Dependencies:**  
p7764[0...n], with n = p7763 - 1

**Notice:**  
For SIMOTION D410-2, this parameter has no significance.

**Note:**  
KHP: Know-How Protection

Even if know-how protection is set, parameters in this list can be read and written to.

**p7764[0...n]**  
**KHP OEM exception list / KHP OEM excep list**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: p7763</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>65535</td>
<td>[0] 7766</td>
</tr>
<tr>
<td>[1...499] 0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**  
OEM exception list (p7764[0...n]) for setting parameters that should be excluded from know-how protection.

**Dependencies:**  
p7764[0...n], with n = p7763 - 1

**Notice:**  
The number of indices depends on p7763.

Refer to: p7763

**Note:**  
KHP: Know-How Protection

Even if know-how protection is set, parameters in this list can be read and written to.

**p7765**  
**KHP memory card copy protection / KHP copy protect**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</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>

**Description:**  
Setting for activating/de-activating copy protection for the memory card.

This means that the OEM can define whether the parameters and DCC data encrypted on the memory card should be protected before using on other memory cards.

**Value:**  
0: Deactivating protection  
1: Activating protection

**Dependencies:**  
Refer to: p7766, p7767, p7768

**Note:**  
KHP: Know-How Protection

The memory card copy protection is only effective when the know-how protection has been activated.

**p7766[0...29]**  
**KHP password input / KHP passw input**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</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>

**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.

Note:
KHP: Know-How Protection
When reading, p7766[0...29] = 42 dec (ASCII character = ***) is displayed.
When using the STARTER commissioning software, when reading via the expert list, p7766[0...29] is displayed with ********.
The following rules apply when entering the password:
- Password entry must start with p7766[0].
- No gaps are permissible in the password.
- Entering a password is completed when writing to p7766[29] (p7766[29] = 0 for passwords less than 30 characters).

p7767[0...29] KHP password new / KHP passw new

Access level: 3
Can be changed: U, T
Units group: -
Min -
Max -
Scaling: -
Unit selection: -
Data type: Unsigned16
Data set: -
Factory setting

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.

p7768[0...29] KHP password confirmation / KHP passw confirm

Access level: 3
Can be changed: U, T
Units group: -
Min -
Max -
Scaling: -
Unit selection: -
Data type: Unsigned16
Data set: -
Factory setting

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

Access level: 3
Can be changed: T
Units group: -
Min -
Max -
Scaling: -
Unit selection: -
Data type: Unsigned8
Data set: -
Factory setting

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
**p7775**

**NVRAM data backup/import/delete / NVRAM backup**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Integer16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Scaling:</th>
<th>Data set:</th>
</tr>
</thead>
<tbody>
<tr>
<td>C, T</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Min: 0  
Max: 17  
Factory setting: 0

**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

**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

**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).

---

**r7841[0...15]**

**Power Module serial number / PM serial no.**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>-</td>
<td>Unsigned8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Scaling:</th>
<th>Data set:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Min: -  
Max: -  
Factory setting: -

**Description:**
Displays the actual serial number of the Power Module.

The individual characters of the serial number are displayed in the ASCII code in the indices.

**Notice:**
An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
**Parameters**

### Parameter list

**r7843[0...20]**  
**Memory card serial number / Mem_card ser.no**

| Access level: | 1 |
| Can be changed: | - |
| Units group: | - |
| Calculated: | - |
| Scaling: | - |
| Data type: | Unsigned8 |
| Factory setting | - |

**Description:** Displays the actual serial number of the memory card.

**Notice:** The individual characters of the serial number are displayed in the ASCII code in the indices.

**Note:** An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

**Example:**
- `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

**r7901[0...43]**  
**Sampling times / t_sample**

| Access level: | 4 |
| Can be changed: | - |
| Units group: | - |
| Calculated: | - |
| Scaling: | - |
| Data type: | FloatingPoint32 |
| Data set: | - |
| Factory setting | - |

**Description:** Displays the sampling times currently present on the drive unit.

**Note:**
- For `r7901[x] = 0`, the following applies:
- The time slice is not active.

**r7903**  
**Hardware sampling times still assignable / HW t_samp free**

| Access level: | 3 |
| Can be changed: | - |
| Units group: | - |
| Calculated: | - |
| Scaling: | - |
| Data type: | Unsigned16 |
| Data set: | - |
| Factory setting | - |

**Description:** Displays the number of hardware sampling times that can still be assigned.

**Note:** These free sampling times can be used by OA applications such as DCC (Drive Control Chart) or FBLOCKS (free function blocks).

**OA:** Open Architecture

**r8570[0...39]**  
**Macro drive object / Macro DO**

| Access level: | 1 |
| Can be changed: | - |
| Units group: | - |
| Calculated: | - |
| Scaling: | - |
| Data type: | Unsigned32 |
| Data set: | - |
| Factory setting | - |

**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.

### r857[0...39] Macro Binector Input (BI) / Macro BI

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the ACX file saved in the appropriate directory in the non-volatile memory.

**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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the ACX file saved in the appropriate directory in the non-volatile memory.

**Dependency:** Refer to: p1000

**Note:** For a value = 9999999, the following applies: The read operation is still running.

### r8573[0...39] Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the ACX file saved in the appropriate directory in the non-volatile memory.

**Dependency:** Refer to: p1500

**Note:** For a value = 9999999, the following applies: The read operation is still running.

### r8585 Macro execution actual / Macro executed

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the macro currently being executed on the drive object.

**Dependency:** Refer to: p0015, p1000, p1500, r8570, r8571, r8572, r8573

### r8854 PROFINET state / PN state

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** State display for PROFINET.

**Value:**
- 0: No initialization
- 1: Fatal fault
- 2: Initialization
## Parameters

### Parameter list

3: Send configuration  
4: Receive configuration  
5: Non-cyclic communication  
6: Cyclic communications but no setpoints (stop/no clock cycle)  
255: Cyclic communication

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| r8854    | PROFINET state / PN state | 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 |

**Min** | **Max** | **Factory setting** |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>255</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** State display for PROFINET.

**Note:** Only for internal Siemens diagnostics.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>r8858[0...39]</td>
<td>PROFINET read diagnostics channel / PN diag_chan read</td>
<td></td>
</tr>
</tbody>
</table>
### r8859[0...7] PROFINET identification data / PN ident_data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index Details</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_PN_F</td>
<td>Displays the PROFINET identification data</td>
<td>[0] = Version interface structure</td>
<td>Example: r8859[0] = 100 --&gt; version of the interface structure V1.00</td>
</tr>
</tbody>
</table>

### r8859[0...7] PROFINET identification data / PN ident_data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index Details</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROFINET</td>
<td>Displays the PROFINET identification data</td>
<td>[0] = Version interface structure</td>
<td>Example: r8859[0] = 100 --&gt; version of the interface structure V1.00</td>
</tr>
</tbody>
</table>
### Parameters

**Parameter list**

#### r8909 PN device ID / PN device ID

<table>
<thead>
<tr>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
</table>

**Access level:** 3  
**Calculated:** -  
**Data type:** Unsigned16  
**Can be changed:** -  
**Scaling:** -  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  
**Min:** -  
**Max:** -  
**Factory setting:** -  

**Description:** Displays the PROFINET Device ID.  
Every SINAMICS device type has its own PROFINET Device ID and its own PROFINET GSD.  

**Note:**  
List of the SINAMICS Device IDs:  
0501 hex: S120/S150  
0504 hex: G130/G150  
0505 hex: GM150  
0509 hex: GL150  
050A hex: DC MASTER  
050B hex: SL150  
050C hex: SM120  
050E hex: S110  
050F hex: G120P  
0510 hex: G120C  
0511 hex: G120  
0512 hex: G120D

#### p8920[0...239] PN Name of Station / PN Name Stat

<table>
<thead>
<tr>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
</table>

**Access level:** 3  
**Calculated:** -  
**Data type:** Unsigned8  
**Can be changed:** U, T  
**Scaling:** -  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  
**Min:** -  
**Max:** -  
**Factory setting:** -  

**Description:** Sets the station name for the onboard PROFINET interface on the Control Unit.  
The active station name is displayed in r8930.  
An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.  
The interface configuration (p8920 and following) is activated with p8925 = 1.  
The parameter is not influenced by setting the factory setting.  
PN: PROFINET

#### p8921[0...3] PN IP address of station / PN IP of stat

<table>
<thead>
<tr>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
</table>

**Access level:** 3  
**Calculated:** -  
**Data type:** Unsigned8  
**Can be changed:** U, T  
**Scaling:** -  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  
**Min:** 0  
**Max:** 255  
**Factory setting:** 0  

**Description:** Sets the IP address for the onboard PROFINET interface on the Control Unit.  
The active IP address is displayed in r8931.  
The interface configuration (p8920 and following) is activated with p8925 = 1.  
The parameter is not influenced by setting the factory setting.
### p8922[0...3] PN Default Gateway of Station / PN Def Gateway

<table>
<thead>
<tr>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong> 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>Units group:</strong> -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>0</td>
<td>255</td>
</tr>
</tbody>
</table>

**Description:**
Sets the default gateway for the onboard PROFINET interface on the Control Unit.

**Note:**
The active default gateway is displayed in r8932.

The parameter is not influenced by setting the factory setting.

### p8923[0...3] PN Subnet Mask of Station / PN Subnet Mask

<table>
<thead>
<tr>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong> 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>Units group:</strong> -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>0</td>
<td>255</td>
</tr>
</tbody>
</table>

**Description:**
Sets the subnet mask for the onboard PROFINET interface on the Control Unit.

**Note:**
The active subnet mask is displayed in r8933.

The parameter is not influenced by setting the factory setting.

### p8925 PN interface configuration / PN IF config

<table>
<thead>
<tr>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong> 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>Units group:</strong> -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

**Description:**
Setting to activate the interface configuration for the onboard PROFINET interface on the Control Unit.

**Value:**
0: No function
1: Activate configuration
2: Activate and save configuration
3: Delete configuration

**Note:**
Re p8925 = 1:
The interface configuration (p8920 and following) is activated.

Re p8925 = 2:
The interface configuration (p8920 and following) is activated and saved to non-volatile memory.

Re p8925 = 3:
Restores all memory locations for the interface configuration to the factory settings.

The factory settings for the interface configuration are loaded on activation (p8925 = 1) or at the next POWER ON.

### p8929 PN remote controller number / PN rem ctrl num

<table>
<thead>
<tr>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong> 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> C</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>Units group:</strong> -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**Description:**
Sets the number of remote controllers expected for PROFINET onboard.

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.

**Note:**
A change only becomes effective after POWER ON, reset or download.

### r8930[0...239] PN Name of Station active / PN Name Stat act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned8</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
</tr>
<tr>
<td>Data set</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection</td>
<td>-</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the active station name for the onboard PROFINET interface on the Control Unit.

### r8931[0...3] PN IP Address of Station active / PN IP of Stat act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned8</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
</tr>
<tr>
<td>Data set</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection</td>
<td>-</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the active IP address for the onboard PROFINET interface on the Control Unit.

### r8932[0...3] PN Default Gateway of Station active / PN Def Gateway act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned8</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
</tr>
<tr>
<td>Data set</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection</td>
<td>-</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the active default gateway for the onboard PROFINET interface on the Control Unit.

### r8933[0...3] PN Subnet Mask of Station active / PN Subnet Mask act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned8</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
</tr>
<tr>
<td>Data set</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection</td>
<td>-</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the active subnet mask for the onboard PROFINET interface on the Control Unit.

### r8935[0...5] PN MAC Address of Station / PN MAC of Station

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned8</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
</tr>
<tr>
<td>Data set</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection</td>
<td>-</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the MAC address for the onboard PROFINET interface on the Control Unit.
### Description:
Displays the PROFINET Device Access Point ID (DAP ID) for the onboard PROFINET interface. The combination of device ID (r8909) and DAP ID uniquely identifies a PROFINET access point.

### Note:
List of the SINAMICS DAP IDs:
- 20005 hex: CBE20 V4.3
- 20006 hex: CBE20 V4.4
- 20007 hex: CBE20 V4.5
- 20106 hex: CU310-2 PN V4.4
- 20107 hex: CU310-2 PN V4.5
- 20206 hex: CU305 PN V4.4
- 20306 hex: CU320-2 PN V4.4
- 20307 hex: CU320-2 PN V4.5
- 20407 hex: CU230-2 PN /CU240-2PN
- 20507 hex: CU250-2 PN

### 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: r8961, r8962

### Note:
Example:
If the parameter contains the value 2 in index [1], then this means that subslot 3 is assigned to controller 2.

### Description:
Displays the IP address of the first PROFINET controller connected with the device via PN onboard.

### Description:
Displays the IP address of the second PROFINET controller connected with the device via PN onboard.
Parameters

Parameter list

p8991   USB memory access / USB mem acc

Access level: 3  Calculated: -  Data type: Integer16
Can be changed: T  Scaling: -  Data set: -
Units group: -  Unit selection: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:** Selects the storage medium for access via the USB mass storage.

**Value:**
1: Memory card
2: Flash r/w internal

**Note:**
A change only becomes effective after a POWER ON.

The parameter is not influenced by setting the factory setting.

p8999   USB functionality / USB functionality

Access level: 4  Calculated: -  Data type: Integer16
Can be changed: T  Scaling: -  Data set: -
Units group: -  Unit selection: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

**Description:** Selecting the USB functionality.

**Value:**
1: USS commissioning via the virtual COM port
2: Only memory access
3: USB commissioning and memory access

**Note:**
COMM: Commissioning.
A change only becomes effective after a POWER ON.

The parameter is not influenced by setting the factory setting.

p9301   SI Motion enable safety functions (processor 2) / SI Mtn enable P2

PM240
PM250
PM260
CU240E-2_DP_F
CU240E-2_PN_F

Access level: 3  Calculated: -  Data type: Unsigned32
Can be changed: C(95)  Scaling: -  Data set: -
Units group: -  Unit selection: -

<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 enable signals for the safe motion monitoring.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Enable SI Motion</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Enable SSM hysteresis and filtering</td>
<td>Enable</td>
<td>Inhibit</td>
<td>2860</td>
</tr>
<tr>
<td>17</td>
<td>Enable SDI</td>
<td>Enable</td>
<td>Inhibit</td>
<td>2861</td>
</tr>
<tr>
<td>30</td>
<td>Enable F-DI in PROFIsafe telegram 900</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p9501
Refer to: F01682, F01683

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
For bit 30 = 1, PROFIsafe telegram 900 must be configured in the F host.
A change only becomes effective after a POWER ON.
F-DI: Failsafe Digital Input
SDI: Safe Direction (safe motion direction)
SLS: Safely-Limited Speed
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)
### Parameter list

#### p9301

**SI Motion enable safety functions (processor 2) / SI Mtn enable P2**

<table>
<thead>
<tr>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM240</td>
</tr>
<tr>
<td>PM250</td>
</tr>
<tr>
<td>PM260</td>
</tr>
<tr>
<td>CU240E-2_F</td>
</tr>
</tbody>
</table>

**Description:**
Sets the enable signals for the safe motion monitoring.

**Dependency:**
Refer to: p9501

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
For bit 30 = 1, PROFIsafe telegram 900 must be configured in the F host.

**A change only becomes effective after a POWER ON.**

**F-DI:** Failsafe Digital Input

**SDI:** Safe Direction (safe motion direction)

**SLS:** Safely-Limited Speed

**SSM:** Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

**Access level:** 3
**Calculated:** -
**Data type:** Unsigned32
**Can be changed:** C(95)
**Scaling:** -
**Data set:** -
**Units group:** -
**Unit selection:** -

<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>Enable SI Motion</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Enable SDI</td>
<td>Enable</td>
<td>Inhibit</td>
<td>2861</td>
<td></td>
</tr>
</tbody>
</table>

#### p9306

**SI Motion function specification (processor 2) / SI Mtn fct spec P2**

<table>
<thead>
<tr>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
</tr>
<tr>
<td>CU240E-2_F</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
</tr>
</tbody>
</table>

**Description:**
Sets the function specification for the safe motion monitoring.

**Value:**
1: Safety without encoder and braking ramp(SBR)
3: Safety without encoder with accel_monitoring(SAM) / delay time

**Dependency:**
Refer to: C30711

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Access level:** 3
**Calculated:** -
**Data type:** Integer16
**Can be changed:** C(95)
**Scaling:** -
**Data set:** -
**Units group:** -
**Unit selection:** -

<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>1</td>
<td>Extended message acknowledgement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Setpoint velocity limit for STOP F</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

#### p9307

**SI Motion function configuration (processor 2) / SI Mtn config P2**

<table>
<thead>
<tr>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM240</td>
</tr>
<tr>
<td>PM250</td>
</tr>
<tr>
<td>PM260</td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
</tr>
<tr>
<td>CU240E-2_F</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
</tr>
</tbody>
</table>

**Description:**
Sets the function configuration for safe motion monitoring.

**Dependency:**
Refer to: C01711

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
When the function is activated, a safety-relevant acknowledgement (internal event acknowledge) can be performed by selecting/deselecting STO.
Re bit 01:
When the function is activated, the active setpoint velocity limit (CO: r9733) is set to zero when STOP F is active.

**p9309**

### SI Motion behavior during pulse suppression (processor 2) / SI Mtn behav IL P2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM240</td>
<td></td>
</tr>
<tr>
<td>PM250</td>
<td></td>
</tr>
<tr>
<td>PM260</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td></td>
</tr>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed</td>
<td>C(95)</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>0000 0000 1111 1111 bin</td>
</tr>
</tbody>
</table>

**Description:**
Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.

**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>SSM during pulse suppression and sensor-less</td>
<td>Becomes inactive</td>
<td>Remains active</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>SDI during pulse suppression and sensor-less</td>
<td>Becomes inactive</td>
<td>Remains active</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: C01711

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Re bit 00:
If the OFF1 or the OFF3 ramp-down time is too low, or there is an insufficient clearance between the SSM limit speed, and the shutdown speed, then it is possible that the "speed under limit value" signal does not change to 1, because no speed actual value below the SSM limit was able to be identified before pulse cancellation. In this case, the OFF1 or the OFF3 ramp-down time or the clearance between the SSM limit speed and shutdown speed must be increased.

**Note:**
SDI: Safe Direction (safe motion direction)
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

Re bit 00:
For bit = 1 and with the SSM safety function activated, the following applies:
- During pulse suppression, monitoring is switched off and the feedback signal has a 0 signal level.

For bit = 0 and with the SSM safety function activated, the following applies:
- Monitoring continues during pulse suppression. The feedback signal last displayed before pulse suppression is kept and the system goes into the STO state.

Re bit 08:
For bit = 1 and with the SDI safety function activated, the following applies:
- During pulse suppression, monitoring is switched off and the status signal indicates inactive.

For bit = 0 and with the SDI safety function activated, the following applies:
- Monitoring continues during pulse suppression. The status signal indicates active and the system goes into the STO state.
**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Re bit 00:
If the OFF1 or the OFF3 ramp-down time is too low, or there is an insufficient clearance between the SSM limit speed, and the shutdown speed, then it is possible that the "speed under limit value" signal does not change to 1, because no speed actual value below the SSM limit was able to be identified before pulse cancellation. In this case, the OFF1 or the OFF3 ramp-down time or the clearance between the SSM limit speed and shutdown speed must be increased.

**Note:**
SDI: Safe Direction (safe motion direction)
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

Re bit 00:
For bit = 1 and with the SSM safety function activated, the following applies:
- During pulse suppression, monitoring is switched off and the feedback signal has a 0 signal level.
For bit = 0 and with the SSM safety function activated, the following applies:
- Monitoring continues during pulse suppression. The feedback signal last displayed before pulse suppression is kept and the system goes into the STO state.

Re bit 08:
For bit = 1 and with the SDI safety function activated, the following applies:
- During pulse suppression, monitoring is switched off and the status signal indicates inactive.
For bit = 0 and with the SDI safety function activated, the following applies:
- Monitoring continues during pulse suppression. The status signal indicates active and the system goes into the STO state.

### p9321[0...7]
**SI Motion gearbox motor/load denominator (processor 2) / SI Mtn gear den P2**

<table>
<thead>
<tr>
<th>CU240E-2_DP_F</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_F</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2147000000</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the denominator for the gearbox between the motor and the load.

**Index:**
- [0] = Gearbox 1
- [1] = Gearbox 2
- [3] = Gearbox 4
- [7] = Gearbox 8

**Dependency:**
Refer to: p9322

**Notice:**
It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.

### p9322[0...7]
**SI Motion gearbox motor/load numerator (processor 2) / SI Mtn gear num P2**

<table>
<thead>
<tr>
<th>CU240E-2_DP_F</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_F</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2147000000</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the numerator for the gearbox between the motor and the load.

**Index:**
- [0] = Gearbox 1
- [1] = Gearbox 2
- [3] = Gearbox 4
- [7] = Gearbox 8

**Dependency:**
Refer to: p9321
Parameters

Parameter list

Notice:
It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.

Note:
In the case of encoderless monitoring functions, the pole pair number must be multiplied by the numerator of the gearbox ratio.

Example:
Gearbox ratio 1:4, pole pair number (r0313) = 2
--> p9321 = 1, p9322 = 8 (4 x 2)

**p9331[0...3]**  SI Motion SLS limit values (processor 2) / SI Mtn SLS lim P2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed</td>
<td>C(95)</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Min</td>
<td>0.01 [rpm]</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>100000.00 [rpm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the limit values for the function “Safely-Limited Speed” (SLS).

**Index:**
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLP4

**Dependency:**
Refer to: p9363, p9531
Refer to: C01714

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SLS: Safely-Limited Speed

**p9342**  SI Motion act. val. comparison tolerance (crossw.) (processor 2) / SI Mtn actV tol P2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed</td>
<td>C(95)</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Min</td>
<td>0.0010 [°]</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>360.0000 [°]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the tolerance for the crosswise data comparison of the actual position between processors 1 and 2.

**Dependency:**
Refer to: p9542
Refer to: C01711

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
For a linear axis, the tolerance is internally limited to 10 mm.
For a “linear axis with rotating motor” and standard setting of p9320, p9321 and p9322, the standard setting of p9342 corresponds to a position tolerance of 36 ° on the motor side.

**p9345**  SI Motion SSM filter time (processor 2) / SI Mtn SSM filt P2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed</td>
<td>C(95)</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [µs]</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>100000.00 [µs]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the filter time for the SSM feedback signal to detect standstill.

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
The filter time is effective only if the function is enabled (p9301.16 = p9501.16 = 1).
The parameter is included in the crosswise data comparison of the two monitoring channels.
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)
**p9346**  
**SI Motion SSM velocity limit (processor 2) / SI Mtn SSM v_limP2**

<table>
<thead>
<tr>
<th>Parameter settings</th>
<th>Description</th>
<th>Dependency</th>
<th>Caution</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
</table>
| **CU240E-2_DP_F** | Sets the velocity limit for the SSM feedback signal to detect standstill (n < nx). When this limit value is undershot, the signal "SSM feedback signal active" is set. | Refer to: p9546 | The following applies for p9306 = 3: The "SAM" function is switched out if the selected threshold value is undershot. | This parameter is overwritten by the copy function of the safety functions integrated in the drive. | **SAM**: Safe Acceleration Monitor (safe acceleration monitoring)  
**SSM**: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring) |

| Access level: | 3 | Calculated: | - |
| Calculated: | - | Data type: | FloatingPoint32 |
| Scale: | - | Data set: | - |
| Units group: | - | Unit selection: | - |
| Min | 0.00 [rpm] | Max | 100000.00 [rpm] |
| Factory setting | 20.00 [rpm] |

**p9347**  
**SI Motion SSM velocity hysteresis (processor 2) / SI Mtn SSM Hyst P2**

<table>
<thead>
<tr>
<th>Parameter settings</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
</table>
| **CU240E-2_DP_F** | Sets the velocity hysteresis for the SSM feedback signal to detect standstill (n < nx). | Refer to: C01711 | This parameter is overwritten by the copy function of the safety functions integrated in the drive. | The velocity hysteresis is effective only if the function is enabled (p9301.16 = p9501.16 = 1). The parameter is included in the crosswise data comparison of the two monitoring channels.  
**SSM**: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring) |

| Access level: | 3 | Calculated: | - |
| Calculated: | - | Data type: | FloatingPoint32 |
| Scale: | - | Data set: | - |
| Units group: | - | Unit selection: | - |
| Min | 0.0010 [rpm] | Max | 500.0000 [rpm] |
| Factory setting | 10.0000 [rpm] |

**p9348**  
**SI Motion SAM actual velocity tolerance (processor 2) / SI mtn SAM tol P2**

<table>
<thead>
<tr>
<th>Parameter settings</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
</table>
| **CU240E-2_DP_F** | Sets the velocity tolerance for the "SAM" function. | Refer to: p9548  
Refer to: C01706 | This parameter is overwritten by the copy function of the safety functions integrated in the drive. | **SAM**: Safe Acceleration Monitor (safe acceleration monitoring) |

| Access level: | 3 | Calculated: | - |
| Calculated: | - | Data type: | FloatingPoint32 |
| Scale: | - | Data set: | - |
| Units group: | - | Unit selection: | - |
| Min | 0.00 [rpm] | Max | 120000.00 [rpm] |
| Factory setting | 300.00 [rpm] |
### Parameters

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
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<tbody>
<tr>
<td>p9351</td>
<td>SI Motion SLS changeover delay time (processor 2) / SI Mtn SLS t P2</td>
<td>CU240E-2_DP_F</td>
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<td>-</td>
<td>FloatingPoint32</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
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<tr>
<td></td>
<td>0.00 [µs]</td>
<td>600000000.00 [µs]</td>
<td>100000.00 [µs]</td>
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<tr>
<td></td>
<td>Description:</td>
<td>Sets the delay time for the SLS changeover for the function &quot;safely limited speed&quot; (SLS).</td>
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<td></td>
<td></td>
<td>When transitioning from a higher to a lower safely-limited velocity/speed stage, within this delay time, the &quot;old&quot; velocity stage remains active.</td>
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<td>Even if SLS is activated from the state &quot;SLS in active&quot;, then this delay is still applied.</td>
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<td>Dependency:</td>
<td>Refer to: p9551</td>
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<td>Notice:</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
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<td>Note:</td>
<td>SLS: Safely-Limited Speed</td>
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<td>p9356</td>
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<td>FloatingPoint32</td>
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<td>CU240E-2_PN_F</td>
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<td>Max</td>
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<td>0.00 [µs]</td>
<td>3600000000.00 [µs]</td>
<td>600000000.00 [µs]</td>
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<tr>
<td></td>
<td>Description:</td>
<td>Sets the delay time for the safe pulse suppression after STOP B / SS1.</td>
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<tr>
<td></td>
<td></td>
<td>In the case of encoderless motion monitoring functions with safe brake ramp monitoring (p9306 = 1) and the OFF3 ramp enabled at the same time (p9507.3 = 0), the parameter has no effect.</td>
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<td>Dependency:</td>
<td>Refer to: p9360, p9556</td>
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<tr>
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<td></td>
<td>Refer to: C01701</td>
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<td>Notice:</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
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<td></td>
<td>Note:</td>
<td>SS1: Safe Stop 1</td>
<td></td>
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<td>p9358</td>
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<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
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<td>CU240E-2_F</td>
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<td>CU240E-2_PN_F</td>
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<tr>
<td></td>
<td>Min</td>
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<td>-</td>
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</tr>
<tr>
<td></td>
<td>5000000.00 [µs]</td>
<td>100000000.00 [µs]</td>
<td>40000000.00 [µs]</td>
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<tr>
<td></td>
<td>Description:</td>
<td>Sets the maximum time for the acceptance test mode.</td>
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<td></td>
<td>If the acceptance test mode takes longer than the selected time limit, then the mode is automatically terminated.</td>
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<tr>
<td></td>
<td></td>
<td>Dependency:</td>
<td>Refer to: p9558</td>
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<td></td>
<td>Refer to: C01799</td>
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<tr>
<td></td>
<td></td>
<td>Notice:</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
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<td></td>
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<td>Note:</td>
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<tr>
<td>p9360</td>
<td>SI Motion pulse suppression shutdown speed (processor 2) / SI Mtn IL n_sh P2</td>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CU240E-2_F</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>CU240E-2_PN_F</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>10.00 [rpm]</td>
<td>6000.00 [rpm]</td>
<td>10.00 [rpm]</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the shutdown speed for the pulse suppression.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Below this speed &quot;standstill&quot; is assumed and for STOP B / SS1, the pulses are suppressed (by changing to STOP A).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dependency:</td>
<td>Refer to: p9356, p9560</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: SS1: Safe Stop 1

### p9363(0...3)

**SI Motion SLS stop response (processor 2) / SI Mtn SLS stop P2**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(95)</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>Integer16</td>
</tr>
<tr>
<td>Data set:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Sets the stop response for the function "Safely-Limited Speed" (SLS). These settings apply to the individual limit values for SLS.

**Value:**
0: STOP A
1: STOP B

**Index:**
[0] = Limit value SLS1
[1] = Limit value SLS2
[2] = Limit value SLS3
[3] = Limit value SLP4

**Dependency:**
Refer to: p9331, p9563

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SLS: Safely-Limited Speed

### p9364

**SI Motion SDI tolerance (processor 2) / SI Mtn SDI tol P2**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(95)</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Data set:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Sets the tolerance for the function "Safe motion direction" (SDI). This motion in the monitored direction is still permissible before safety message C30716 is initiated.

**Dependency:**
Refer to: p9365, p9366

Refer to: C30716

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SDI: Safe Direction (safe motion direction)

### p9365

**SI Motion SDI delay time (processor 2) / SI Mtn SDI t P2**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(95)</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Data set:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Sets the delay time for the function "Safe motion direction" (SDI). When selecting the SDI function, motion in the monitored direction is permissible as a maximum for this time; this means that this time can be used for braking existing motion.

**Dependency:**
Refer to: p9364, p9366

Refer to: C30716

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SDI: Safe Direction (safe motion direction)
### Parameter List

#### p9366
**SI Motion SDI stop response (processor 2) / SI Mtn SDI Stop P2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9366</td>
<td>Sets the stop response for the function &quot;Safe motion direction&quot; (SDI). This setting applies to both directions of motion. In the case of encoderless motion monitoring (p9306 = 1), only a value of 0 or 1 is permitted.</td>
<td>0: STOP A</td>
<td>Refer to: p9364, p9365</td>
<td>SDI: Safe Direction (safe motion direction)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: STOP B</td>
<td>Refer to: C30716</td>
<td></td>
</tr>
</tbody>
</table>

#### p9368
**SI Motion SAM velocity limit (processor 2) / SI Mtn SAM v_limP2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9368</td>
<td>Sets the velocity tolerance limit for the &quot;SAM&quot; function. SAM is de-activated once the set velocity limit has been undershot.</td>
<td>0.00 [rpm]</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
<td>SAM: Safe Acceleration Monitor (safe acceleration monitoring) SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring) For p9568 = p9368 = 0, the following applies: The value in p9546/p9346 (SSM) is applied as the velocity limit for SAM.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1000.00 [rpm]</td>
<td>Refer to: C01799</td>
<td></td>
</tr>
</tbody>
</table>

#### p9370
**SI Motion acceptance test mode (processor 2) / SI Mtn acc_mod P2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9370</td>
<td>Setting to select and de-select the acceptance test mode. Acceptance test mode can only be selected if the motion monitoring functions, which are integrated in the drives, are enabled (p9601.2/p9801.2).</td>
<td>0: [00 hex] De-select the acceptance test mode</td>
<td>Refer to: p9358, r9371</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>172: [AC hex] Select the acceptance test mode</td>
<td>Refer to: C01799</td>
<td></td>
</tr>
</tbody>
</table>

#### r9371
**SI Motion acceptance test status (processor 2) / SI Mtn acc_stat P2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9371</td>
<td>Displays the status of the acceptance test mode.</td>
<td>0000 hex</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

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### Parameter List

#### Value:

- **0**: [00 hex] Acc_mode inactive
- **12**: [0C hex] Acc_mode not possible due to POWER ON fault
- **13**: [0D hex] Acc_mode not possible due to incorrect ID in p9370
- **15**: [0F hex] Acc_mode not possible due to expired Acc_timer
- **172**: [AC hex] Acc_mode active

#### Dependency:

Refer to: p9358, p9370
Refer to: C01799

---

#### p9381

**SI Motion brake ramp reference value (processor 2) / SI Mtn ramp ref P2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9381</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
</tr>
</tbody>
</table>

- **Min**: 600.0000 [rpm]
- **Max**: 240000.0000 [rpm]
- **Factory setting**: 1500.0000 [rpm]

**Description:**

Sets the reference value to define the brake ramp.

The rate of rise of the brake ramp depends upon p9381 (reference value) and p9383 (monitoring time).

**Dependency:**

Refer to: p9382, p9383

**Notice:**

This parameter is overwritten by the copy function of the safety functions integrated in the drive.

---

#### p9382

**SI Motion brake ramp delay time (processor 2) / SI Mtn rp t_del P2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9382</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
</tr>
</tbody>
</table>

- **Min**: 10000.00 [µs]
- **Max**: 99000000.00 [µs]
- **Factory setting**: 250000.00 [µs]

**Description:**

Sets the delay time for monitoring the brake ramp.

Monitoring of the brake ramp starts once the delay time has elapsed.

**Dependency:**

Refer to: p9381, p9383

**Notice:**

This parameter is overwritten by the copy function of the safety functions integrated in the drive.

---

#### p9383

**SI Motion brake ramp monitoring time (processor 2) / SI Mtn rp t_mon P2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9383</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
</tr>
</tbody>
</table>

- **Min**: 500.00 [ms]
- **Max**: 3600000.00 [ms]
- **Factory setting**: 10000.00 [ms]

**Description:**

Sets the monitoring time to define the brake ramp.

The rate of rise of the brake ramp depends upon p9381 (reference value) and p9383 (monitoring time).

**Dependency:**

Refer to: p9381, p9382

**Notice:**

This parameter is overwritten by the copy function of the safety functions integrated in the drive.

---

#### p9385

**SI Motion fault tolerance actual value sensing sensorless (MM) / SI mtn Sl to si MM**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9385</td>
<td>3</td>
<td>-</td>
<td>Integer32</td>
<td>-</td>
</tr>
</tbody>
</table>

- **Min**: -1
- **Max**: 4
- **Factory setting**: -1

**Description:**

Sets the tolerance of the plausibility monitoring of the current and voltage angle

p9385 = 4 must be parameterized for synchronous motors.

**Dependency:**

Refer to: p9507
Refer to: C01711, F30681

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### Parameters

**Parameter list**

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive. Reducing this value can adversely affect the actual value sensing and the plausibility check. When the value is increased, this results in a longer evaluation delay.

**Note:**
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).
For a value of -1, for synchronous motors, the value 4 is used automatically for the calculation – and for induction motors, the value 0.

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated:</th>
<th>Scaling:</th>
<th>Data type:</th>
<th>Can be changed:</th>
<th>Units group:</th>
<th>Unit selection:</th>
<th>Data set:</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9386</td>
<td>SI Motion delay time of the evaluation sensorless (processor 2) / SI mtn t_del SL P2</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100.00 [ms]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td>5.00 [ms]</td>
<td>1000.00 [ms]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sets the evaluation delay for encoderless actual value sensing after pulse enable. The value should be greater than or equal to the motor magnetizing time.</td>
</tr>
<tr>
<td></td>
<td>Dependency:</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Refer to: C30711</td>
</tr>
<tr>
<td></td>
<td>Notice:</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive. If this value is reduced, this can have a negative impact on the actual value acquisition and plausibility check – and result in Safety message C30711 with the message value 1041 or 1042. When the value is increased, this results in a longer evaluation delay.</td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).</td>
</tr>
<tr>
<td>p9387</td>
<td>SI Motion encoderless act val sensing filter time (processor 2) / SI Mtn SL fiit P2</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>250000.00 [µs]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td>0.00 [µs]</td>
<td>100000.00 [µs]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sets the filter time for smoothing the actual value with sensorless actual value sensing.</td>
</tr>
<tr>
<td></td>
<td>Notice:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
</tr>
<tr>
<td>p9388</td>
<td>SI Motion actual value sensing minimum current (processor 2) / SI Mtn SL I_min P2</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10.00 [%]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td>0.00 [%]</td>
<td>1000.00 [%]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sets the minimum current for encoderless actual value sensing in reference to 10 mA (i.e. when 1 % = 10 mA). - The value must be increased if C30711 has occurred with message value 1042. - The value must be decreased if C30711 has occurred with message value 1041.</td>
</tr>
<tr>
<td></td>
<td>Dependency:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Refer to: C30711</td>
</tr>
<tr>
<td></td>
<td>Notice:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive. Reducing this percentage value can adversely affect actual value sensing.</td>
</tr>
<tr>
<td>p9389</td>
<td>SI Motion voltage tolerance acceleration (processor 2) / SI Mtn U tol P2</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100.00 [%]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td>10.00 [%]</td>
<td>3300.00 [%]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sets the voltage tolerance for suppressing acceleration peaks.</td>
</tr>
</tbody>
</table>
An increase in this percentage value means that voltage peaks will need to have a higher amplitude when accelerating if they are not to affect actual value sensing.

- The value must be increased if C30711 with message value 1042 has occurred.
- The value must be lowered if acceleration procedures have led to an excessive Safety actual velocity.

**Dependency:**
Refer to: C30711

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

### r9398[0...1] SI Motion actual checksum SI parameters (processor 2) / SI Mtn act CRC P2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the checksum over the checked Safety Integrated parameters of the motion monitoring functions (actual checksum) on processor 2.

**Index:**
- [0] = Checksum over SI parameters for motion monitoring
- [1] = Checksum over SI parameters with hardware reference

**Dependency:**
Refer to: p9399

### p9399[0...1] SI Motion setpoint checksum SI parameters (processor 2) / SI Mtn setp CRC P2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Sets the checksum over the checked Safety Integrated parameters of the motion monitoring functions (actual checksum) on processor 2.

**Index:**
- [0] = Checksum over SI parameters for motion monitoring
- [1] = Checksum over SI parameters with hardware reference

**Dependency:**
Refer to: r9398

### p9400 Safely remove memory card / Mem_card rem

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>-</td>
<td>Integer16</td>
</tr>
</tbody>
</table>

**Description:**
Setting and display when memory card is "removed safely".

**Procedure:**
Setting p9400 = 2 results in a value of 3

--> The memory card can be removed safely. After removal the value sets itself to 0 automatically.

Setting p9400 = 2 results in a value of 100

--> 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.

**Value:**

- 0: No memory card inserted
- 1: Memory card inserted
- 2: Request "safe removal" of the memory card
- 3: "Safe removal" possible
- 100: "Safe removal" not possible due to access

**Dependency:**
Refer to: r9401

**Caution:**
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 repaired.
Parameters

Parameter list

**Note:**

The status when the memory card is being "removed safely" is shown in r9401.

Re value = 0, 1, 3, 100:

These values can only be displayed, not set.

---

**r9401**

**Safely remove memory card status / Mem_card rem stat**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Scaling:</th>
<th>Data set:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**

Displays the status of the memory card.

<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>Memory card inserted</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>Memory card activated</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>SIEMENS memory card</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>Memory card as USB data storage medium from the PC used</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: p9400

**Note:**

Re bit 00 and bit 01:

Bit 1/0 = 0/0: No memory card inserted (corresponds to p9400 = 0).

Bit 1/0 = 0/1: "Safe removal" possible (corresponds to p9400 = 3).

Bit 1/0 = 1/0: Status not possible.

Bit 1/0 = 1/1: Memory card inserted (corresponds to p9400 = 1, 2, 100).

Re bit 00 and bit 02:

Bit 2/0 = 0/0: No memory card inserted.

Bit 2/0 = 0/1: No memory card inserted, but not a SIEMENS memory card

Bit 2/0 = 1/0: Status not possible.

Bit 2/0 = 1/1: SIEMENS memory card inserted.

---

**r9406[0...19]**

**PS file parameter number parameter not transferred / PS par_no n transf**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Scaling:</th>
<th>Data set:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<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
### Parameter list

#### r9407[0...19]
**PS file parameter index parameter not transferred / PS parameter index**

| 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].
| 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

| Access level | 4 |
| Calculated | - |
| Can be changed | - |
| Scaling | - |
| Units group | - |
| Min | - |
| Max | - |
| Data type | Unsigned16 |
| Data set | - |
| Factory setting | - |

#### r9408[0...19]
**PS file fault code parameter not transferred / PS fault code**

| Description | Only for internal Siemens service purposes.
| Dependency | Refer to: r9406, r9407
| Note | All indices from r9406 to r9408 designate the same parameter.
r9406[x] parameter number, parameter not accepted
r9407[x] parameter index, parameter not accepted
r9408[x] fault code, parameter not accepted

| Access level | 4 |
| Calculated | - |
| Can be changed | - |
| Scaling | - |
| Units group | - |
| Min | - |
| Max | - |
| Data type | Unsigned16 |
| Data set | - |
| Factory setting | - |

#### r9409
**Number of parameters to be saved / Qty par to save**

| Description | Displays the number of modified parameters and those that have still not be saved for this drive object.
| Dependency | Refer to: p0971
| Notice | Inherent to the system, the list of the parameters to be backed up is empty after the following actions:
- Download
- Warm restart
- Factory setting
In these cases, a new parameter backup must be initiated, which is then the starting point for the list of modified parameters.

| Access level | 4 |
| Calculated | - |
| Can be changed | - |
| Scaling | - |
| Units group | - |
| Min | - |
| Max | - |
| Data type | Unsigned16 |
| Data set | - |
| Factory setting | - |

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SINAMICS G120 CU240B/E-2 Control Units  List Manual (LH11), 01/2012

1-347
### Parameter list

#### r9451[0...29] Units changeover adapted parameters / Unit_chngov par

<table>
<thead>
<tr>
<th>Access level: 4</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Min**

<table>
<thead>
<tr>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

**Description:** Displays the parameters whose parameter would have to be changed during a units changeover.

**Dependency:** Refer to: F07088

#### r9463 Actual macro / Actual macro

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Min**

<table>
<thead>
<tr>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

**Description:** Displays the set valid macro.

**Note:** A value of 0 is displayed if a parameter set by a macro is changed.

#### p9484 BICO interconnections search signal source / BICO S_src srch

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Min**

<table>
<thead>
<tr>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

**Description:** Sets the signal source (BO/CO parameter, BICO coded) to search in the signal sinks.

The signal source to be searched for is set in p9484 (BICO-coded) and the search result is specified using the number (r9485) and the first index (r9486).

**Dependency:** Refer to: r9485, r9486

#### r9485 BICO interconnections signal source search count / BICO S_src srchQty

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Min**

<table>
<thead>
<tr>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

**Description:** Displays the number of BICO interconnections to the signal sink being searched for.

**Dependency:** Refer to: p9484, r9486

**Note:** The signal source to be searched is set in p9484 (BICO-coded). The search result is contained in r9482 and r9483 and is specified by the count (r9485) and the first index (r9486).

#### r9486 BICO interconnections signal source search first index / BICO S_src srchIdx

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Min**

<table>
<thead>
<tr>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

**Description:** Displays the first index of the signal source being searched for.

The signal source to be searched for is set in p9484 (BICO-coded) and the search result is specified using the number (r9485) and the first index (r9486).

**Dependency:** Refer to: p9484, r9485
### p9501
#### SI Motion enable safety functions (processor 1) / SI Mtn enable P1

<table>
<thead>
<tr>
<th>PM240</th>
<th>PM250</th>
<th>PM260</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong> 3</td>
<td><strong>Can be changed:</strong> C(95)</td>
<td><strong>Units group:</strong> -</td>
</tr>
</tbody>
</table>

**Description:**
Sets the enable signals for the safe motion monitoring.

#### Dependency:
Refer to: F01682, F01683

**Note:**
For bit 30 = 1, PROFIsafe telegram 900 must be configured in the F host. A change only becomes effective after a POWER ON.

**F-DI:** Failsafe Digital Input
**SDI:** Safe Direction (safe motion direction)
**SLS:** Safely-Limited Speed
**SSM:** Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

#### Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Enable SI Motion</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Enable SSM hysteresis and filtering</td>
<td>Enable</td>
<td>Inhibit</td>
<td>2860</td>
</tr>
<tr>
<td>17</td>
<td>Enable SDI</td>
<td>Enable</td>
<td>Inhibit</td>
<td>2861</td>
</tr>
<tr>
<td>30</td>
<td>Enable F-DI in PROFIsafe telegram</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Factory setting:
0000 0000 0000 0000 0000 0000 0000 0000

### p9506
#### SI Motion function specification (processor 1) / SI Mtn fct_spc P1

<table>
<thead>
<tr>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_F</th>
<th>CU240E-2_PN_F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Access level:</strong> 3</td>
<td><strong>Can be changed:</strong> C(95)</td>
<td><strong>Units group:</strong> -</td>
</tr>
</tbody>
</table>

**Description:**
Sets the function specification for the safe motion monitoring.

#### Dependency:
Refer to: F01682, F01683

**Note:**
For bit 30 = 1, PROFIsafe telegram 900 must be configured in the F host. A change only becomes effective after a POWER ON.

**F-DI:** Failsafe Digital Input
**SDI:** Safe Direction (safe motion direction)
**SLS:** Safely-Limited Speed
**SSM:** Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)
**Parameters**

**Parameter list**

| Value: | 1: Safety without encoder with braking ramp (SBR)  |
|        | 3: Safety without encoder with accel_monitoring(SAM) / delay time |

**Dependency:**

Refer to: C01711

### p9507

**SI Motion function configuration (processor 1) / SI Mtn config P1**

<table>
<thead>
<tr>
<th>PM240</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM250</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>PM260</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Sets the function configuration for safe motion monitoring.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Extended message acknowledgement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Setpoint velocity limit for STOP F</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: C01711

**Note:**

Re bit 00:

When the function is activated, a safety-relevant acknowledgement (internal event acknowledge) can be performed by selecting/deselecting STO.

Re bit 01:

When the function is activated, the active setpoint velocity limit (CO: r9733) is set to zero when STOP F is active.

### p9509

**SI Motion behavior during pulse suppression (processor 1) / SI Mtn behav IL P1**

<table>
<thead>
<tr>
<th>PM240</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM250</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>PM260</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.

**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>SSM during pulse suppression and sensor-less</td>
<td>Becomes inactive</td>
<td>Remains active</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>SDI during pulse suppression and sensor-less</td>
<td>Becomes inactive</td>
<td>Remains active</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: C01711

**Note:**

SDI: Safe Direction (safe motion direction)
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

Re bit 00:

- If the OFF1 or the OFF3 ramp-down time is too low, or there is an insufficient clearance between the SSM limit speed, and the shutdown speed, then it is possible that the "speed under limit value" signal does not change to 1, because no speed actual value below the SSM limit was able to be identified before pulse cancellation. In this case, the OFF1 or the OFF3 ramp-down time or the clearance between the SSM limit speed and shutdown speed must be increased.

- During pulse suppression, monitoring is switched off and the feedback signal has a 0 signal level.

Re bit 08:

- Monitoring continues during pulse suppression. The feedback signal last displayed before pulse suppression is kept and the system goes into the STO state.
Re bit 08:
For bit = 1 and with the SDI safety function activated, the following applies:
- During pulse suppression, monitoring is switched off and the status signal indicates inactive.
For bit = 0 and with the SDI safety function activated, the following applies:
- Monitoring continues during pulse suppression. The status signal indicates active and the system goes into the STO state.

<table>
<thead>
<tr>
<th>p9509</th>
<th>SI Motion behavior during pulse suppression (processor 1) / SI Mtn behav IL P1</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM240</td>
<td>Access level: 3 Calculated: - Data type: Unsigned32</td>
</tr>
<tr>
<td>PM250</td>
<td>Can be changed: C(95) Scaling: - Data set: -</td>
</tr>
<tr>
<td>PM260</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.</td>
</tr>
<tr>
<td>Bit field:</td>
<td>Bit Signal name</td>
</tr>
<tr>
<td></td>
<td>08 SDI during pulse suppression and sensor-less</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: C01711</td>
</tr>
<tr>
<td>Notice:</td>
<td>Re bit 00:</td>
</tr>
<tr>
<td></td>
<td>If the OFF1 or the OFF3 ramp-down time is too low, or there is an insufficient clearance between the SSM limit speed, and the shutdown speed, then it is possible that the &quot;speed under limit value&quot; signal does not change to 1, because no speed actual value below the SSM limit was able to be identified before pulse cancellation. In this case, the OFF1 or the OFF3 ramp-down time or the clearance between the SSM limit speed and shutdown speed must be increased.</td>
</tr>
<tr>
<td>Note:</td>
<td>SDI: Safe Direction (safe motion direction)</td>
</tr>
<tr>
<td></td>
<td>SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)</td>
</tr>
</tbody>
</table>

Re bit 00:
For bit = 1 and with the SSM safety function activated, the following applies:
- During pulse suppression, monitoring is switched off and the feedback signal has a 0 signal level.
For bit = 0 and with the SSM safety function activated, the following applies:
- Monitoring continues during pulse suppression. The feedback signal last displayed before pulse suppression is kept and the system goes into the STO state.

Re bit 08:
For bit = 1 and with the SDI safety function activated, the following applies:
- During pulse suppression, monitoring is switched off and the status signal indicates inactive.
For bit = 0 and with the SDI safety function activated, the following applies:
- Monitoring continues during pulse suppression. The status signal indicates active and the system goes into the STO state.

<table>
<thead>
<tr>
<th>p9521[0...7]</th>
<th>SI Motion gearbox motor/load denominator (processor 1) / SI Mtn gear den P1</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>Access level: 3 Calculated: - Data type: Unsigned32</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>Can be changed: C(95) Scaling: - Data set: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the denominator for the gearbox between the motor and the load.</td>
</tr>
<tr>
<td>Index:</td>
<td>[0] = Gearbox 1</td>
</tr>
<tr>
<td></td>
<td>[1] = Gearbox 2</td>
</tr>
<tr>
<td></td>
<td>[7] = Gearbox 8</td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

**Dependency:** Refer to: p9522

**Notice:** It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9522[0...7]</td>
<td>SI Motion gearbox motor/load numerator (processor 1) / SI Mtn gear num P1</td>
<td></td>
<td></td>
<td>Unsigned32</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2147000000</td>
<td>-</td>
</tr>
<tr>
<td>p9531[0...3]</td>
<td>SI Motion SLS limit values (processor 1) / SI Mtn SLS lim P1</td>
<td></td>
<td></td>
<td>FloatingPoint32</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.01 [rpm]</td>
<td>100000.00 [rpm]</td>
<td>2000.00 [rpm]</td>
</tr>
<tr>
<td>p9533</td>
<td>SI Motion SLS setpoint speed limit (processor 1) / SI Mtn SLS set_lim</td>
<td></td>
<td></td>
<td>FloatingPoint32</td>
<td>U, T</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.000 [%]</td>
<td>100.000 [%]</td>
<td>80.000 [%]</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the numerator for the gearbox between the motor and the load.
- Sets the limit values for the function "Safely-Limited Speed" (SLS).
- This is an evaluation factor to define the setpoint limit from the selected actual speed limit.

**Index:**
- \([0]\) = Gearbox 1
- \([1]\) = Gearbox 2
- \([2]\) = Gearbox 3
- \([3]\) = Gearbox 4
- \([4]\) = Gearbox 5
- \([5]\) = Gearbox 6
- \([6]\) = Gearbox 7
- \([7]\) = Gearbox 8

**Dependency:**
- Refer to: p9521
- Refer to: p9563
- Refer to: C01714

**Note:**
- In the case of encoderless monitoring functions, the pole pair number must be multiplied by the numerator of the gearbox ratio.
- Example:
  - Gearbox ratio 1:4, pole pair number \((r0313) = 2\)
  - \(\rightarrow p9521 = 1, p9522 = 8 \ (4 \times 2)\)

**Note:**
- SLS: Safely-Limited Speed

**Dependency:**
- This parameter only has to be parameterized for the motion monitoring functions integrated in the drive \((p9601.2 = 1)\)
- \(r9733[0] = p9531[x] \times p9533\) (converted from the load side to the motor side)
- \(r9733[1] = - p9531[x] \times p9533\) (converted from the load side to the motor side)
- \([x]\) = Selected SLS stage
Conversion factor from the motor side to the load side:
- motor type = rotary and axis type = linear: \( p9522 / (p9521 \times p9520) \)
- otherwise: \( p9522 / p9521 \)
Refer to: \( p9501, p9531, p9601 \)

**Note:**
The active actual speed limit is selected via PROFIsafe.
With STOP A, B, setpoint 0 is specified in r9733.
If \( p9533 = 0 \) is set, the setpoint speed limit is de-activated, and \( r9733[0] = p1082 \) and \( r9733[1] = -p1082 \) are set
SLS: Safely-Limited Speed

### p9542
**SI Motion act. val. comparison tolerance (crossw.) (processor 1) / SI Mtn act tol P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Units group:**
- **Min:** 0.0010 \( [\text{'}] \)
- **Max:** 360.0000 \( [\text{'}] \)
- **Factory setting:** 12.0000 \( [\text{'}] \)

**Description:**
Sets the tolerance for the crosswise data comparison of the actual position between processors 1 and 2.

**Dependency:**
Refer to: C01711

**Note:**
For a linear axis, the tolerance is internally limited to 10 mm.
For a "linear axis with rotating motor" and standard setting of \( p9520, p9521 \) and \( p9522 \), the standard setting of \( p9542 \) corresponds to a position tolerance of 36 ° on the motor side.

### p9545
**SI Motion SSM filter time (processor 1) / SI Mtn SSM filt P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM240</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>PM250</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PM260</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Units group:**
- **Min:** 0.00 \( [\text{ms}] \)
- **Max:** 100.00 \( [\text{ms}] \)
- **Factory setting:** 0.00 \( [\text{ms}] \)

**Description:**
Sets the filter time for the SSM feedback signal to detect standstill.

**Note:**
The filter time is effective only if the function is enabled (\( p9501.16 = 1 \)).
The parameter is included in the crosswise data comparison of the two monitoring channels.
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

### p9546
**SI Motion SSM velocity limit (processor 1) / SI Mtn SSM v_limP1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Units group:**
- **Min:** 0.00 \( [\text{rpm}] \)
- **Max:** 100000.00 \( [\text{rpm}] \)
- **Factory setting:** 20.00 \( [\text{rpm}] \)

**Description:**
Sets the velocity limit for the SSM feedback signal to detect standstill (\( n < nx \)).
When this limit value is undershot, the signal "SSM feedback signal active" is set.

**Caution:**
The following applies for \( p9506 = 3 \):
The "SAM" function is switched out if the selected threshold value is undershot.

**Note:**
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
<th>Data set: -</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p9547</strong></td>
<td>SI Motion SSM velocity hysteresis (processor 1) / SI Mtn SSM hyst P1</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Min 0.0010 [rpm]</td>
<td>Max 500.0000 [rpm]</td>
</tr>
<tr>
<td><strong>p9548</strong></td>
<td>SI Motion SAM actual velocity tolerance (processor 1) / SI mtn SAM tol P1</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Min 0.00 [rpm]</td>
<td>Max 120000.00 [rpm]</td>
</tr>
<tr>
<td><strong>p9551</strong></td>
<td>SI Motion SLS changeover delay time (processor 1) / SI Mtn SLS t P1</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Min 0.00 [ms]</td>
<td>Max 600000.00 [ms]</td>
</tr>
<tr>
<td><strong>p9556</strong></td>
<td>SI Motion pulse suppression delay time (processor 1) / SI Mtn IL t_del P1</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Min 0.00 [ms]</td>
<td>Max 3600000.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:**
- p9547: Sets the velocity hysteresis for the SSM feedback signal to detect standstill (n < nx).
- p9548: Sets the velocity tolerance for the "SAM" function.
- p9551: Sets the delay time for the SLS changeover for the function "safely limited speed" (SLS).
- p9556: Sets the delay time for the safe pulse suppression after STOP B.

**Dependency:**
- Refer to: C01711
- Refer to: C01706
- Refer to: p9560

**Note:**
- The velocity tolerance is effective only if the function is enabled (p9501.16 = 1).
- The parameter is included in the crosswise data comparison of the two monitoring channels.
- SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)
- SAM: Safe Acceleration Monitor (safe acceleration monitoring)
- SLS: Safely-Limited Speed

**Units group:**
- -

**Unit selection:**
- -

**Min Max Factory setting**
- 0.0010 [rpm] 500.0000 [rpm] 10.0000 [rpm]
- 0.00 [rpm] 120000.00 [rpm] 300.00 [rpm]
- 0.00 [ms] 600000.00 [ms] 100.00 [ms]
- 0.00 [ms] 3600000.00 [ms] 600000.00 [ms]
Parameter list

**p9558**  
SI Motion acceptance test mode time limit (processor 1) / SI Mtn acc t P1  

<table>
<thead>
<tr>
<th>Processor</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5000.00 [ms]</td>
<td>100000.00 [ms]</td>
<td>40000.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the maximum time for the acceptance test mode.  
If the acceptance test mode takes longer than the selected time limit, then the mode is automatically terminated.  

**Dependency:**  
Refer to: C01799

---

**p9559**  
SI Motion forced checking procedure timer (processor 1) / SI Mtn dyn timer  

<table>
<thead>
<tr>
<th>Processor</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00 [h]</td>
<td>9000.00 [h]</td>
<td>8.00 [h]</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the time interval for carrying out the forced checking procedure and testing the safety motion monitoring functions integrated in the drives.  
Within the parameterized time, the safety functions must have been tested at least once (including de-selection of the "STO" function).  
This monitoring time is reset each time the test is carried out.  
The signal source to initiate the forced checking procedure is set in p9705.  

**Dependency:**  
Refer to: p9705, A01697, C01798

**Note:**  
STO: Safe Torque Off

---

**p9560**  
SI Motion pulse suppression shutdown speed (processor 1) / SI Mtn IL v_sh P1  

<table>
<thead>
<tr>
<th>Processor</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10.00 [rpm]</td>
<td>6000.00 [rpm]</td>
<td>10.00 [rpm]</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the shutdown speed for the pulse suppression.  
Below this speed "standstill" is assumed and for STOP B, the pulses are suppressed by changing to STOP A.  

**Dependency:**  
Refer to: p9559

---

**p9563[0...3]**  
SI Motion SLS-specific stop response (processor 1) / SI Mtn SLS stop P1  

<table>
<thead>
<tr>
<th>Processor</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>Integer16</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the SLS-specific stop response for the function "Safely-Limited Speed" (SLS).  
These settings apply to the individual limit values for SLS.

**Value:**  
0: STOP A  
1: STOP B

**Index:**  
[0] = Limit value SLS1  
[1] = Limit value SLS2  
[2] = Limit value SLS3  
[3] = Limit value SLP4
## Parameters

### Parameter list

**Dependency:** Refer to: p9531  
**Note:** SLS: Safely-Limited Speed

### p9564  SI Motion SDI tolerance (processor 1) / SI Mtn SDI tol P1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_F</th>
<th>CU240E-2_PN_F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td>Calculated: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Can be changed</td>
<td>C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.001 [°]</td>
<td>360.000 [°]</td>
<td>Factory setting 12.000 [°]</td>
</tr>
</tbody>
</table>

**Description:** Sets the tolerance for the function "Safe motion direction" (SDI). This motion in the monitored direction is still permissible before safety message C01716 is initiated.

**Dependency:** Refer to: p9565, p9566  
Refer to: C01716

**Note:** SDI: Safe Direction (safe motion direction)

### p9565  SI Motion SDI delay time (processor 1) / SI Mtn SDI t P1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_F</th>
<th>CU240E-2_PN_F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td>Calculated: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Can be changed</td>
<td>C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [ms]</td>
<td>60000.00 [ms]</td>
<td>Factory setting 100.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:** Sets the delay time for the function "Safe motion direction" (SDI). When selecting the SDI function, motion in the monitored direction is permissible as a maximum for this time; this means that this time can be used for braking existing motion.

**Dependency:** Refer to: p9564, p9566  
Refer to: C01716

**Note:** SDI: Safe Direction (safe motion direction)

### p9566  SI Motion SDI stop response (processor 1) / SI Mtn SDI Stop P1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_F</th>
<th>CU240E-2_PN_F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td>Calculated: -</td>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>Can be changed</td>
<td>C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>1</td>
<td>Factory setting 1</td>
</tr>
<tr>
<td>Max</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the stop response for the function "Safe motion direction" (SDI). This setting applies to both directions of motion.

**Value:** 0: STOP A  
1: STOP B

**Dependency:** Refer to: p9564, p9565  
Refer to: C01716

**Note:** SDI: Safe Direction (safe motion direction)

### p9568  SI Motion SAM velocity limit (processor 1) / SI Mtn SAM v_limP1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_F</th>
<th>CU240E-2_PN_F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
<td>Calculated: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Can be changed</td>
<td>C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [rpm]</td>
<td>1000.00 [rpm]</td>
<td>Factory setting 0.00 [rpm]</td>
</tr>
</tbody>
</table>

**Description:** Sets the velocity tolerance limit for the "SAM" function. SAM is de-activated once the set velocity limit has been undershot.
Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

For p9568 = p9368 = 0, the following applies:
The value in p9546/p9346 (SSM) is applied as the velocity limit for SAM.

### p9570

**SI Motion acceptance test mode (processor 1) / SI Mtn acc_mod P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>Integer16</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Units group:** -

**Units:** -

**Min:** 0000 hex

**Max:** 00AC hex

**Factory setting:** 0000 hex

**Description:**
Setting to select and de-select the acceptance test mode.

**Value:**
- \([00 \text{ hex}]\) De-select the acceptance test mode
- \([AC \text{ hex}]\) Select the acceptance test mode

**Dependency:**
Refer to: p9558, r9571, p9601

**Note:**
Acceptance test mode can only be selected if the motion monitoring functions, which are integrated in the drives, are enabled (p9601.2/p9801.2).

### r9571

**SI Motion acceptance test status (processor 1) / SI Mtn acc_status**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>Integer16</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Units group:** -

**Units:** -

**Min:** 0000 hex

**Max:** 00AC hex

**Factory setting:** -

**Description:**
Displays the status of the acceptance test mode.

**Value:**
- \([00 \text{ hex}]\) Acc_mode inactive
- \([0C \text{ hex}]\) Acc_mode not possible due to POWER ON fault
- \([0D \text{ hex}]\) Acc_mode not possible due to incorrect ID in p9570
- \([0F \text{ hex}]\) Acc_mode not possible due to expired Acc Timer
- \([AC \text{ hex}]\) Acc_mode active

**Dependency:**
Refer to: p9558, p9570

**Note:**
Refer to: C01799

### p9581

**SI Motion brake ramp reference value (processor 1) / SI Mtn ramp ref P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Units group:** -

**Units:** -

**Min:** 600.0000 [rpm]

**Max:** 240000.0000 [rpm]

**Factory setting:** 1500.0000 [rpm]

**Description:**
Sets the reference value to define the brake ramp.
The rate of rise of the brake ramp depends upon p9581 (reference value) and p9583 (monitoring time).

**Dependency:**
Refer to: p9582, p9583
### Parameter List

#### p9582
**SI Motion brake ramp delay time (processor 1) / SI Mtn ramp t P1**

<table>
<thead>
<tr>
<th>CU240E-2_DP_F</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_F</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.00 [ms]</td>
<td>99000.00 [ms]</td>
<td>250.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the delay time for monitoring the brake ramp. Monitoring of the brake ramp starts once the delay time has elapsed.

**Dependency:**
Refer to: p9581, p9583

#### p9583
**SI Motion brake ramp monitoring time (processor 1) / SI Mtn rp t_mon P1**

<table>
<thead>
<tr>
<th>CU240E-2_DP_F</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_F</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.50 [s]</td>
<td>3600.00 [s]</td>
<td>10.00 [s]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the monitoring time to define the brake ramp. The rate of rise of the brake ramp depends upon p9581 (reference value) and p9583 (monitoring time).

**Dependency:**
Refer to: p9581, p9582

#### p9585
**SI Motion fault tolerance actual value sensing sensorless (CU) / SI mtn Sl to SL CU**

<table>
<thead>
<tr>
<th>CU240E-2_DP_F</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Integer32</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_F</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1</td>
<td>4</td>
<td>-1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the tolerance of the plausibility monitoring of the current and voltage angle. p9585 = 4 must be parameterized for synchronous motors.

**Dependency:**
Refer to: r9787
Refer to: F01681, C01711

**Notice:**
Reducing this value can adversely affect the actual value sensing and the plausibility check. When the value is increased, this results in a longer evaluation delay.

**Note:**
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).
For a value of -1, for synchronous motors, the value 4 is used automatically for the calculation – and for induction motors, the value 0.

#### p9586
**SI Motion delay time of the evaluation sensorless (CU) / SI Mtn t_del SL CU**

<table>
<thead>
<tr>
<th>CU240E-2_DP_F</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_F</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.00 [ms]</td>
<td>1000.00 [ms]</td>
<td>100.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the evaluation delay for encoderless actual value sensing after pulse enable. The value should be greater than or equal to the motor magnetizing time.

**Dependency:**
Refer to: C01711

**Notice:**
If this value is reduced, this can have a negative impact on the actual value acquisition and plausibility check – and result in Safety message C01711 with the message value 1041 or 1042. When the value is increased, this results in a longer evaluation delay.

**Note:**
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).
### Parameter List

#### p9587  SI Motion encoderless act val sensing filter time (processor 1) / SI Mtn SL flt P1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Scaling</th>
<th>Data type</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9587</td>
<td>Sets the filter time for smoothing the actual value with sensorless actual value sensing.</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00 [ms]</td>
<td>100.00 [ms]</td>
<td>25.00 [ms]</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: r9785
- Refer to: C01711

**Notice:** Reducing this percentage value can adversely affect actual value sensing.

#### p9588  SI Motion act val sensing sensorless min current (processor 1) / SI Mtn SL I_min P1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Scaling</th>
<th>Data type</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9588</td>
<td>Sets the minimum current for encoderless actual value sensing in reference to 10 mA (i.e. when 1 % = 10 mA).</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00 [%]</td>
<td>1000.00 [%]</td>
<td>10.00 [%]</td>
</tr>
</tbody>
</table>

**Dependency:**
- The value must be increased if C01711 has occurred with message value 1042.
- The value must be decreased if C01711 has occurred with message value 1041.

**Notice:**
- Refer to: r9785
- Refer to: C01711

**Reducing this percentage value can adversely affect actual value sensing.**

#### p9589  SI Motion voltage tolerance acceleration (processor 1) / SI Mtn U tol P1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Scaling</th>
<th>Data type</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9589</td>
<td>Sets the voltage tolerance for suppressing acceleration peaks.</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>10.00 [%]</td>
<td>3300.00 [%]</td>
<td>100.00 [%]</td>
</tr>
</tbody>
</table>

**Dependency:**
- The value must be increased if C01711 with message value 1043 has occurred.
- The value must be lowered if acceleration procedures have led to an excessive Safety actual velocity.

**Notice:**
- Refer to: r9784
- Refer to: C01711

#### r9590[0...3]  SI Motion version safety motion monitoring (processor 1) / SI Mtn version P1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Scaling</th>
<th>Data type</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9590[0...3]</td>
<td>Displays the Safety Integrated version for the safe monitoring functions.</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>Unsigned16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Index:**
- [0] = Safety Version (major release)
- [1] = Safety Version (minor release)
- [2] = Safety Version (baselevel or patch)
- [3] = Safety Version (hotfix)

**Dependency:**
- Refer to: r9770

**Note:**
- Example: r9590[0] = 2, r9590[1] = 60, r9590[2] = 1, r9590[3] = 0 --> SI Motion version V02.60.01.00
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Hex Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000 hex:</td>
<td>Safety functions integrated in the drive inhibited (no safety function).</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>0001 hex:</td>
<td>Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1).</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>0004 hex:</td>
<td>Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9771.5 = 1).</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>0005 hex:</td>
<td>Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9771.5 = 1).</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>0008 hex:</td>
<td>Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1).</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>0009 hex:</td>
<td>Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1).</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>000C hex:</td>
<td>Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1).</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>000D hex:</td>
<td>Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9771.4 = 1).</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r9771, p9801

**Note:** A change only becomes effective after a POWER ON.

**F-DI:** Failsafe Digital Input.

**STO:** Safe Torque Off
Parameter list

Parameters

0008 hex:
Basic functions are enabled via PROFINet (permissible for r9771.6 = 1).

0009 hex:
Basic functions are enabled via PROFINet onboard terminals (permissible for r9771.6 = 1).

000C hex:
Extended functions are enabled via PROFINet (permissible for r9771.4 = 1).

000D hex:
Extended functions are enabled via PROFINet and basic functions via onboard terminals (permissible for r9771.4 = 1).

Dependency:
Refer to: r9771, p9801

Note:
A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input.
STO: Safe Torque Off

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Enable STO via terminals (processor 1)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>2810</td>
</tr>
<tr>
<td>02</td>
<td>Enable drive_integr motion monitoring functions (processor 1)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Enable PROFINet (processor 1)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
</tbody>
</table>

p9601

Si enable, functions integrated in the drive (processor 1) / Si enable fct P1

PM240
PM250
PM260
CU240E-2_DP
CU240E-2 PN

Min Max Factory setting
- - 0000 bin

Description:
Sets the enable signals for the safety functions integrated in the drive and the type of selection on processor 1.

0000 hex:
Safety functions integrated in the drive inhibited (no safety function).

0001 hex:
Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1).

0004 hex:
Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9771.5 = 1).

0005 hex:
Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9771.5 = 1).

0008 hex:
Basic functions are enabled via PROFINet (permissible for r9771.6 = 1).

0009 hex:
Basic functions are enabled via PROFINet onboard terminals (permissible for r9771.6 = 1).

000C hex:
Extended functions are enabled via PROFINet (permissible for r9771.4 = 1).

000D hex:
Extended functions are enabled via PROFINet and basic functions via onboard terminals (permissible for r9771.4 = 1).

Dependency:
Refer to: r9771, p9801

Note:
A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input.
STO: Safe Torque Off
### Parameters

#### Parameter list

**p9601**  
**SI enable, functions integrated in the drive (processor 1) / SI enable fct P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sets the enable signals for the safety functions integrated in the drive and the type of selection on processor 1.</td>
<td>00 - 0F</td>
<td>-</td>
<td>-</td>
<td>0000 bin</td>
</tr>
<tr>
<td></td>
<td>Safety functions integrated in the drive inhibited (no safety function).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9771.5 = 1).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r9771, p9801  
**Note:** A change only becomes effective after a POWER ON.  
F-DI: Failsafe Digital Input.  
STO: Safe Torque Off

**p9610**  
**SI PROFIsafe address (processor 1) / SI PROFIsafe P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sets the PROFIsafe address for processor 1.</td>
<td>0000 hex</td>
<td>FFFE hex</td>
<td>0000 hex</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p9810
**p9650  SI F-DI changeover tolerance time (processor 1) / SI F-DI_chg tol P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9650</td>
<td>Sets the tolerance time for the changeover of the failsafe digital input for STO on processor 1.</td>
<td>3</td>
<td>-</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>500.00 [ms]</td>
</tr>
</tbody>
</table>

Dependency: Refer to: p9850

Note: For a crosswise data comparison between p9650 and p9850, a difference of one Safety monitoring clock cycle is tolerated.

The parameterized time is rounded internally to an integer multiple of the monitoring clock cycle.

F-DI: Failsafe Digital Input

**p9651  SI STO debounce time (processor 1) / SI STO t_debou P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9651</td>
<td>Sets the debounce time for the failsafe digital inputs used to control the &quot;STO&quot; function.</td>
<td>3</td>
<td>-</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1.00 [ms]</td>
</tr>
</tbody>
</table>

Note: The debounce time is rounded to whole milliseconds. It specifies the maximum duration of a fault pulse at the failsafe digital inputs with no reaction/influence on the selection or deselection of the Safety Basic Functions.

Example:
Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.
Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

**p9659  SI forced checking procedure timer / SI FCP Timer**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9659</td>
<td>Sets the time interval for carrying out the forced checking procedure and testing the Safety shutdown paths.</td>
<td>3</td>
<td>-</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8.00 [h]</td>
</tr>
</tbody>
</table>

Dependency: Refer to: A01699

Note: STO: Safe Torque Off
**Parameters**

**Parameter list**

---

**r9660**

**SI forced checking procedure remaining time / SI frc chk remain**

<table>
<thead>
<tr>
<th>CU240E-2</th>
<th>CU240E-2_DP</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_F</th>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
</table>

- **Access level:** 3
- **Can be changed:** -
- **Units group:** -
- **Calculated:** -
- **Scaling:** -
- **Unit selection:** -
- **Data type:** FloatingPoint32
- **Data set:** -
- **Factory setting:** -

**Description:** Displays the time remaining before dynamization and testing of the safety shutdown paths (forced checking procedure).

**Dependency:** Refer to: A01699

---

**p9700**

**SI copy function / SI copy function**

<table>
<thead>
<tr>
<th>CU240E-2</th>
<th>CU240E-2_DP</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_F</th>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
</table>

- **Access level:** 3
- **Can be changed:** C(95), U, T
- **Units group:** -
- **Calculated:** -
- **Scaling:** -
- **Unit selection:** -
- **Data type:** Integer16
- **Data set:** -
- **Factory setting:** -

**Min:** 0000 hex
**Max:** 00D0 hex
**Factory setting:** 0000 hex

**Description:** Setting to start the required copy function.

After starting, the corresponding parameters are copied from processor 1 to processor 2. Once copying is complete, the parameter is automatically reset to zero.

**Value:**
- 0: [00 hex] Copy function ended
- 29: [1D hex] Start copy function node identifier
- 87: [57 hex] Start copy function SI parameters
- 208: [D0 hex] Start copy function SI basic parameters

**Dependency:** Refer to: r3996

**Notice:** When the parameters are copied, short-term communication interruptions may occur.

**Note:**
- Re value = 57 hex and D0 hex:
  - The value can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.
- Re value = D0 hex:
  - The following parameters are copied after starting the copy function:
p9601 --> p9801, p9610 --> 9810, p9650 --> p9850, p9851 --> p9851

---

**p9701**

**Acknowledge SI data change / Ackn SI data**

<table>
<thead>
<tr>
<th>CU240E-2</th>
<th>CU240E-2_DP</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_F</th>
<th>CU240E-2_PN_F</th>
<th>CU240E-2 PN</th>
</tr>
</thead>
</table>

- **Access level:** 3
- **Can be changed:** C(95), U, T
- **Units group:** -
- **Calculated:** -
- **Scaling:** -
- **Unit selection:** -
- **Data type:** Integer16
- **Data set:** -
- **Factory setting:** -

**Min:** 0000 hex
**Max:** 00EC hex
**Factory setting:** 0000 hex

**Description:** Setting to transfer the reference checksums from the associated actual checksums after changes (SI parameters, hardware).

After transferring the reference checksums, parameters are automatically reset to zero.

**Value:**
- 0: [00 hex] Data unchanged
- 172: [AC hex] Acknowledge data change complete
- 220: [DC hex] Acknowledge SI basic parameter change
- 236: [EC hex] Acknowledge hardware CRC
Dependency: Refer to: r9398, p9399, r9728, p9729, r9798, p9799, r9898, p9899

Note: Re value = AC and DC hex:
These values can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.

---

**P9705**

**BI: SI Motion: Test stop signal source / SI Mtn test stop**

<table>
<thead>
<tr>
<th>Parameter Group</th>
<th>Access level</th>
<th>Calculated</th>
<th>Units group</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>Sets the signal source for the test stop of the safety-relevant motion monitoring functions.</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Index:**

- [0] = Load-side actual value on the CU
- [1] = Load-side actual value on the second channel
- [2] = Load-side actual value difference CU - second channel
- [3] = Load-side max. actual value difference CU - second channel
- [4] = Load-side actual value as safe position via PROFIsafe

**Dependency:** Refer to: r9713

**Note:**
- Re index 0:
The display of the load-side position actual value on processor 1 is updated in the monitoring clock cycle.
- Re index 1:
The display of the load-side position actual value on processor 2 is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.
- Re index 2:
The difference between the load-side position actual value on processor 1 and load-side position actual value on processor 2 is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.
- Re index 3:
The maximum difference between the load-side position actual value on processor 1 and the load-side position actual value on processor 2.
- Re index 4:
The content corresponds to the value in index 0.

CDC: Crosswise Data Comparison

---

**R9708[0...4]**

**SI Motion diagnostics safe position / SI mtn safe pos**

<table>
<thead>
<tr>
<th>Parameter Group</th>
<th>Access level</th>
<th>Calculated</th>
<th>Units group</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>Displays the actual load-side actual values of both monitoring channels and their difference.</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Index:**

- [0] = Load-side actual value on the CU
- [1] = Load-side actual value on the second channel
- [2] = Load-side actual value difference CU - second channel
- [3] = Load-side max. actual value difference CU - second channel
- [4] = Load-side actual value as safe position via PROFIsafe

**Dependency:** Refer to: r9713

**Note:**
- Re index 0:
The display of the load-side position actual value on processor 1 is updated in the monitoring clock cycle.
- Re index 1:
The display of the load-side position actual value on processor 2 is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.
- Re index 2:
The difference between the load-side position actual value on processor 1 and load-side position actual value on processor 2 is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.
- Re index 3:
The maximum difference between the load-side position actual value on processor 1 and the load-side position actual value on processor 2.
- Re index 4:
The content corresponds to the value in index 0.

CDC: Crosswise Data Comparison

---

**R9710[0...1]**

**SI Motion diagnostics result list 1 / SI Mtn res_list 1**

<table>
<thead>
<tr>
<th>Parameter Group</th>
<th>Access level</th>
<th>Calculated</th>
<th>Units group</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>Displays result list 1 that, for the crosswise data comparison between the monitoring channels, led to the fault.</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Index:**

- [0] = Result list processor 2
- [1] = Result list processor 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>06</td>
<td>Actual value &gt; upper limit, SLS1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Actual value &gt; lower limit, SLS1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Actual value &gt; upper limit, SLS2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
Parameters

Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>09</td>
<td>Actual value &gt; lower limit, SLS2</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>10</td>
<td>Actual value &gt; upper limit, SLS3</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>11</td>
<td>Actual value &gt; lower limit, SLS4</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>12</td>
<td>Actual value &gt; upper limit, SLS4</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>13</td>
<td>Actual value &gt; lower limit, SLS4</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>16</td>
<td>Actual value &gt; upper limit, SAM/SBR</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>17</td>
<td>Actual value &gt; lower limit, SAM/SBR</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>18</td>
<td>Actual value &gt; upper limit SDI positive</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>19</td>
<td>Actual value &gt; lower limit SDI positive</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>20</td>
<td>Actual value &gt; upper limit SDI negative</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>21</td>
<td>Actual value &gt; lower limit SDI negative</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Dependency: Refer to: C01711

Note:
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe brake ramp monitoring)
SLS: Safety-Limited Speed

r9712  CO: SI Motion diagnostics pos. act. val. motor side (processor 1) / SI Mtn s_act motP1

CU240E-2_DP_F
CU240E-2_F
CU240E-2_PN_F

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the actual motor-side position actual value for the motion monitoring functions on processor 1. The &quot;milledegrees&quot; unit applies.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note</td>
<td>The display is updated in the safety monitoring clock cycle.</td>
</tr>
</tbody>
</table>

r9713[0...4]  CO: SI Motion diagnostics position actual value load side / SI Mtn s_act load

CU240E-2_DP_F
CU240E-2_F
CU240E-2_PN_F

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the actual load-side actual values of both monitoring channels and their difference. The &quot;milledegrees&quot; unit applies.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>[0] = Load-side actual value on processor 1 (P1) [1] = Load-side actual value on processor 2 (P2) [2] = Load-side actual value difference P1 - P2 [3] = Load-side maximum actual value difference P1 - P2 [4] = Load-side actual value as safe position via PROFIsafe</td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: r9708, r9724</td>
</tr>
<tr>
<td>Note</td>
<td>The value of this parameter is displayed in r9708 with units (mm or degrees). The display is updated in the safety monitoring clock cycle.</td>
</tr>
<tr>
<td>Re index 0</td>
<td>The display of the load-side position actual value on processor 1 is updated in the monitoring clock cycle.</td>
</tr>
<tr>
<td>Re index 1</td>
<td>The display of the load-side position actual value on processor 2 is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.</td>
</tr>
<tr>
<td>Re index 2</td>
<td>The difference between the load-side position actual value on processor 1 and load-side position actual value on processor 2 is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.</td>
</tr>
<tr>
<td>Re index 3</td>
<td>The maximum difference between the load-side position actual value on processor 1 and the load-side position actual value on processor 2.</td>
</tr>
</tbody>
</table>
The content corresponds to the value in index 0.

CDC: Crosswise Data Comparison

**r9714[0...2]**

**CO: SI Motion diagnostics velocity (processor 1) / SI Mtn diag v P1**

<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>[0] = Load-side velocity actual value on processor 1</td>
<td>Displays the actual velocity values for the motion monitoring functions on processor 1.</td>
<td>[1] = Actual SAM/SBR velocity limit on processor 1</td>
<td>Refer to: r9732</td>
<td>This SLS velocity limit can, as a result of conversion into the internal monitoring format, deviate from the specified SLS velocity limit (see r9732).</td>
<td>The display is updated in the safety monitoring clock cycle.</td>
</tr>
<tr>
<td>[2] = Actual SLS velocity limit on the processor 1</td>
<td></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>De-select STO</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>De-select SS1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>De-select SLS</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>De-select SLP</td>
<td>Yes</td>
<td>No</td>
<td>2822</td>
</tr>
<tr>
<td>07</td>
<td>Acknowledgement</td>
<td>Signal edge active</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Select SLS bit 0</td>
<td>Set</td>
<td>Not set</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Select SLS bit 1</td>
<td>Set</td>
<td>Not set</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Deselect SDI positive</td>
<td>Yes</td>
<td>No</td>
<td>2861</td>
</tr>
<tr>
<td>13</td>
<td>Deselect SDI negative</td>
<td>Yes</td>
<td>No</td>
<td>2861</td>
</tr>
</tbody>
</table>

**r9720.0...13**

**CO/BO: SI Motion control signals integrated in the drive / SI Mtn integ STW**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field: Bit</th>
<th>Signal name 1 signal 0 signal FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control signals for safety-relevant motion monitoring functions integrated in the drive.</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>De-select STO</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>De-select SS1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>De-select SLS</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Acknowledgement</td>
<td>Signal edge active</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Select SLS bit 0</td>
<td>Set</td>
<td>Not set</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Select SLS bit 1</td>
<td>Set</td>
<td>Not set</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions (STO), the value is equal to zero.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Access level</th>
<th>Units group</th>
<th>Access area</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Deselect SDI positive</td>
<td>Yes No</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Deselect SDI negative</td>
<td>Yes No</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**
This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions (STO), the value is equal to zero.

#### r9722.0...15 CO/BO: SI Motion status signals integrated in the drive / SI Mtn integ stat

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO or safe pulse cancellation active</td>
<td>Yes No</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>SS1 active</td>
<td>Yes No</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>SLS active</td>
<td>Yes No</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Internal event</td>
<td>No Yes</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Active SLS stage bit 0</td>
<td>Set Not set</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Active SLS stage bit 1</td>
<td>Set Not set</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>SDI pos active</td>
<td>Yes No</td>
<td>2861</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>SDI neg active</td>
<td>Yes No</td>
<td>2861</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>SSM (speed below limit value)</td>
<td>Yes No</td>
<td>2860</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Notice:**
An internal event is displayed if a STOP A ... F is active.
The signal state behaves in an opposite way to the PROFIsafe Standard.

**Note:**
This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions (STO), the value is equal to zero.

#### r9722.0...13 CO/BO: SI Motion status signals integrated in the drive / SI Mtn integ stat

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO or safe pulse cancellation active</td>
<td>Yes No</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>SS1 active</td>
<td>Yes No</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>SLS active</td>
<td>Yes No</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Internal event</td>
<td>No Yes</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Active SLS stage bit 0</td>
<td>Set Not set</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Active SLS stage bit 1</td>
<td>Set Not set</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>SDI pos active</td>
<td>Yes No</td>
<td>2861</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>SDI neg active</td>
<td>Yes No</td>
<td>2861</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Notice:**
An internal event is displayed if a STOP A ... F is active.
The signal state behaves in an opposite way to the PROFIsafe Standard.

**Note:**
This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions (STO), the value is equal to zero.
**Parameters**

**Parameter list**

---

**r9723.0...16**  
**CO/BO: SI Motion diagnostic signals integrated in the drive / SI Mtn integ diag**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU240-E-2_DP_F</strong></td>
<td>Displays the diagnostic signals for safety-relevant motion monitoring functions integrated in the drive.</td>
<td><strong>00</strong> Forced checking procedure required</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>01</strong> For ESR, STOP F and subsequent stop B is active</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>02</strong> Communication failure</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>03</strong> Actual value sensing supplies valid value</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>04</strong> Encoderless act val sensing acc to technique for U/f control</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>09</strong> Safe pulse cancellation active</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>16</strong> SAM/SBR active</td>
</tr>
</tbody>
</table>

**Note:**
ESR: Extended Stop and Retract  
SAM: Safe Acceleration Monitor (safe acceleration monitoring)  
SBR: Safe Brake Ramp (safe brake ramp monitoring)

---

**r9724**  
**SI Motion crosswise comparison clock cycle / SI Mtn CDC clk cyc**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU240-E-2_DP_F</strong></td>
<td>Displays the crosswise comparison clock cycle. The value indicates the clock cycle time with which each individual CDC value is compared between the two monitoring channels.</td>
<td><strong>00</strong> For ESR, STOP F and subsequent stop B is active</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>01</strong> Communication failure</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>02</strong> Actual value sensing supplies valid value</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>04</strong> Encoderless act val sensing acc to technique for U/f control</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>09</strong> Safe pulse cancellation active</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>16</strong> SAM/SBR active</td>
</tr>
</tbody>
</table>

**Note:**
CDC: Crosswise Data Comparison

---

**r9725[0...2]**  
**SI Motion, diagnostics STOP F / SI Mtn Diag STOP F**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU240-E-2_DP_F</strong></td>
<td>Displays the message value that resulted in the STOP F on the drive. Value = 0: Processor 1 signaled a STOP F. Value = 1 ... 999: Number of the incorrect date in the crosswise data comparison between the monitoring channels. Value &gt;= 1000: Additional diagnostic values of the drive.</td>
<td><strong>00</strong> Forced checking procedure required</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>01</strong> For ESR, STOP F and subsequent stop B is active</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>02</strong> Communication failure</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>03</strong> Actual value sensing supplies valid value</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>04</strong> Encoderless act val sensing acc to technique for U/f control</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>09</strong> Safe pulse cancellation active</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>16</strong> SAM/SBR active</td>
</tr>
</tbody>
</table>

**Index:**
- [0] = Message value for CDC  
- [1] = Processor 1 CDC actual value  
- [2] = Processor 2 CDC actual value

---

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### Parameters

#### Parameter list

**Dependency:**
Refer to: C01711

**Note:**
The significance of the individual message values is described in message C01711.

**CDC:** Crosswise Data Comparison

#### r9728[0...2]
**SI Motion actual checksum SI parameters (processor 1) / SI Mtn act CRC P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**
Displays the checksum over the checked Safety Integrated parameters of the motion monitoring functions (actual checksum).

**Index:**
- [0] = Checksum over SI parameters for motion monitoring
- [1] = Checksum over SI parameters for actual values
- [2] = Checksum over SI parameters for hardware

**Dependency:**
Refer to: p9729

Refer to: F01680

#### p9729[0...2]
**SI Motion setpoint checksum SI parameters (processor 1) / SI Mtn setp CRC P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>0000 hex</td>
<td>Max</td>
<td>FFFF FFFF hex</td>
</tr>
</tbody>
</table>

**Description:**
Sets the checksum using the checksum-tested Safety Integrated parameters for motion monitoring functions (reference checksum).

**Index:**
- [0] = Checksum over SI parameters for motion monitoring
- [1] = Checksum over SI parameters for actual values
- [2] = Checksum over SI parameters for hardware

**Dependency:**
Refer to: r9728

Refer to: F01680

#### r9732
**SI Motion velocity resolution / SI Mtn v_res**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>- [rpm]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**
Displays the safe velocity resolution (load side).

**Note:**
This parameter does not provide any information about the actual accuracy of the velocity sensing. This depends on the type of actual value sensing, the gear factors as well as the quality of the encoder being used.

#### r9733[0...2]
**CO: SI Motion setpoint speed limit effective / SI Mtn setp_lim**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>- [rpm]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**
Displays the necessary setpoint speed limit as a result of the selected motion monitoring functions.

Contrary to the parameterization of the SI limit values, this parameter specifies the motor-side limit value and not the load-side limit value.
Index:  
[0] = Setpoint limiting positive  
[1] = Setpoint limiting negative  
[2] = Setpoint limit absolute  

Dependency:  
For SLS: \( r9733[0] = p9531[x] \times p9533 \) (converted from the load side to the motor side)  
For SDI negative: \( r9733[0] = 0 \)  
For SLS: \( r9733[1] = -p9531[x] \times p9533 \) (converted from the load side to the motor side)  
For SDI positive: \( r9733[1] = 0 \)  
\([x]\) = Selected SLS stage  
Conversion factor from the motor side to the load side:  
- motor type = rotary and axis type = linear: \( p9522 / (p9521 \times p9520) \)  
- otherwise: \( p9522 / p9521 \)  
Refer to: \( p9531, p9533 \)  

Notice:  
If \( p1051 = r9733[0] \) is interconnected, \( p1052 = r9733[1] \) must also be interconnected and vice versa.  
If only the absolute value of the setpoint velocity limiting is required, \( r9733[2] \) must be interconnected.  

Note:  
If the "SLS" function is not selected, \( r9733[0] \) shows \( p1082 \) and \( r9733[1] \) shows \( -p1082 \).  
The display in \( r9733 \) can be delayed by up to one Safety monitoring clock cycle as compared to the display in \( r9720 \) and \( r9722 \).  

---

**r9734.0...14**  
**CO/BO: SI Motion Safety Info Channel status word / SI Mtn info ch ZSW**  
CU240E-2_DP_F  
CU240E-2_F  
CU240E-2_PN_F  

<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>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>SS1 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>SLS active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>SLS selected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Internal event</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>SDI positive selected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>SDI neg selected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>ESR retract requested</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notice:**  
Re bit 07:  
An internal event is displayed if a STOP A ... F is active.  
The signal state behaves in an opposite way to the PROFIsafe Standard.  

**Note:**  
This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions (STO), the value is equal to zero.  

---

**r9742.0...15**  
**CO/BO: SI Motion drive-integrated status signals (processor 2) / SI Mtn int stat P2**  
CU240E-2_DP_F  
CU240E-2_PN_F  

<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>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO or safe pulse cancellation active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>SS1 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>SLS active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Internal event</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Active SLS stage bit 0</td>
<td>Set</td>
<td>Not set</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Active SLS stage bit 1</td>
<td>Set</td>
<td>Not set</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>SDI pos active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**  
Status signal for safety-relevant motion monitoring functions integrated in the drive.  

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### Parameters

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>SDI neg active</td>
<td>Yes</td>
<td>No</td>
<td>Status signal for safety-relevant motion monitoring functions integrated in the drive.</td>
</tr>
<tr>
<td>15</td>
<td>SSM (speed below limit value)</td>
<td>Yes</td>
<td>No</td>
<td>Status signal for safety-relevant motion monitoring functions integrated in the drive.</td>
</tr>
</tbody>
</table>

**Notice:**
Re bit 07: An internal event is displayed if a STOP A ... F is active. The signal state behaves in an opposite way to the PROFIsafe Standard.

**Note:**
This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions (STO), the value is equal to zero.

### r9742.0...15

**CO/BO: SI Motion drive-integrated status signals (processor 2) / SI Mtn int stat P2**

<table>
<thead>
<tr>
<th>CU240E-2_F</th>
<th>Access level: 4</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
<th>Can be changed: -</th>
<th>Scaling: -</th>
<th>Data set: -</th>
<th>Units group: -</th>
<th>Unit selection: -</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Status signal for safety-relevant motion monitoring functions integrated in the drive.

**Bit field:**
- **00** STO or safe pulse cancellation active
- **01** SS1 active
- **04** SLS active
- **07** Internal event
- **09** Active SLS stage bit 0
- **10** Active SLS stage bit 1
- **15** SSM (speed below limit value)

**Notice:**
Re bit 07: An internal event is displayed if a STOP A ... F is active. The signal state behaves in an opposite way to the PROFIsafe Standard.

**Note:**
This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions (STO), the value is equal to zero.

### p9761

**SI password input / SI password inp**

<table>
<thead>
<tr>
<th>CU240E-2</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
<th>Can be changed: C, T</th>
<th>Scaling: -</th>
<th>Data set: -</th>
<th>Units group: -</th>
<th>Unit selection: -</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Enters the Safety Integrated password.

**Dependency:**
Refer to: F01659

**Note:**
It is not possible to change Safety Integrated parameters until the Safety Integrated password has been entered.

### p9762

**SI password new / SI password new**

<table>
<thead>
<tr>
<th>CU240E-2</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
<th>Can be changed: C(95)</th>
<th>Scaling: -</th>
<th>Data set: -</th>
<th>Units group: -</th>
<th>Unit selection: -</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Enters a new Safety Integrated password.
Dependency: A change made to the Safety Integrated password must be acknowledged in the following parameter:
Refer to: p9763

### p9763
**SI password acknowledgement / SI ackn password**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2</td>
<td>3</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Signed32</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unsigned32</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unsigned32</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unsigned32</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unsigned32</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unsigned32</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Acknowledges the new Safety Integrated password.

**Dependency:**
Refer to: p9762

**Note:**
The new password entered into p9762 must be re-entered in order to acknowledge.

p9762 = p9763 = 0 is automatically set after the new Safety Integrated password has been successfully acknowledged.

### r9765
**SI Motion forced checking procedure remaining time (processor 1) / SI Mtn dyn rem P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FloatingPoint32</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Signed32</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unsigned32</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the time remaining until the next dynamization and testing of the safety motion monitoring functions integrated in the drives.

The signal source to initiate the forced checking procedure is parameterized in p9705.

**Dependency:**
Refer to: p9705
Refer to: C01798

### r9768[0...7]
**SI PROFIsafe receive control words (processor 1) / SI Ps PZD recv P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Data type</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unsigned16</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unsigned16</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unsigned16</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unsigned16</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the received PROFIsafe telegram on processor 1.

**Index:**

<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>[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>
</tbody>
</table>

**Dependency:**
Refer to: r9769

**Note:**
The PROFIsafe trailer at the end of the telegram is also displayed (2 words).
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9769[0...7]</td>
<td>SI PROFIsafe send status words (processor 1) / SI Ps PZD send P1</td>
<td>Displays the PROFIsafe telegram to be sent on processor 1.</td>
<td>The PROFIsafe trailer at the end of the telegram is also displayed (2 words).</td>
</tr>
<tr>
<td>r9770[0...3]</td>
<td>SI version drive-integrated safety function (processor 1) / SI version Drv P1</td>
<td>Displays the Safety Integrated version for the drive-integrated safety functions on processor 1.</td>
<td>Example: $r9770[0] = 2, r9770[1] = 60, r9770[2] = 1, r9770[3] = 0 \rightarrow$ Safety version V02.60.01.00</td>
</tr>
<tr>
<td>r9771</td>
<td>SI common functions (processor 1) / SI general fct P1</td>
<td>Displays the supported Safety Integrated monitoring functions.</td>
<td></td>
</tr>
</tbody>
</table>

---

### Parameter Table

**r9769[0...7]**

<table>
<thead>
<tr>
<th>Device</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP</td>
<td>3</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU240E-2 PN</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Min Max Factory setting**

- - -

**Description:** Displays the PROFIsafe telegram to be sent on processor 1.

**Index:**

- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8

**Dependency:** Refer to: r9768

**Note:**

- Refer to: r9768

---

**r9770[0...3]**

<table>
<thead>
<tr>
<th>Device</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2</td>
<td>3</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU240E-2 PN</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Min Max Factory setting**

- - -

**Description:** Displays the Safety Integrated version for the drive-integrated safety functions on processor 1.

**Index:**

- [0] = Safety Version (major release)
- [1] = Safety Version (minor release)
- [2] = Safety Version (baselevel or patch)
- [3] = Safety Version (hotfix)

**Note:**

- Example: $r9770[0] = 2, r9770[1] = 60, r9770[2] = 1, r9770[3] = 0 \rightarrow$ Safety version V02.60.01.00

---

**r9771**

<table>
<thead>
<tr>
<th>Device</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2</td>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
</tr>
</tbody>
</table>

**Min Max Factory setting**

- - -

**Description:** Displays the supported Safety Integrated monitoring functions. Processor 1 determines this display.

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO supported via terminals</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r9871

**Note:**

- STO: Safe Torque Off
### r9771

#### SI common functions (processor 1) / SI general fct P1

**CU240E-2_DP**
- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** -
- **Scaling:** -
- **Data set:** -

**CU240E-2_PN**
- **Units group:** -
- **Unit selection:** -

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO supported via terminals</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>02</td>
<td>Extended Functions supported (p9501 &gt; 0)</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>04</td>
<td>Extended Functions PROFIsafe supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Extended Functions integrated in drive supported (p9601.2 = 1)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Basic Functions PROFIsafe supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Extended Functions encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Extended Functions SDI supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Extended Functions SSM encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r9871

**Note:** STO: Safe Torque Off

### Description:
Displays the supported Safety Integrated monitoring functions. Processor 1 determines this display.

---

### r9771

#### SI common functions (processor 1) / SI general fct P1

**CU240E-2_F**
- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** -
- **Scaling:** -
- **Data set:** -

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO supported via terminals</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>06</td>
<td>Basic Functions PROFIsafe supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Extended Functions encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Extended Functions SDI supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Extended Functions SSM encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r9871

**Note:** STO: Safe Torque Off

### Description:
Displays the supported Safety Integrated monitoring functions. Processor 1 determines this display.

---

### r9771

#### SI common functions (processor 1) / SI general fct P1

**CU240E-2_PN**
- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** -
- **Scaling:** -
- **Data set:** -

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO supported via terminals</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>02</td>
<td>Extended Functions supported (p9501 &gt; 0)</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>05</td>
<td>Extended Functions integrated in drive supported (p9601.2 = 1)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Extended Functions encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Extended Functions SDI supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Extended Functions SSM encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r9871

**Note:** STO: Safe Torque Off

### Description:
Displays the supported Safety Integrated monitoring functions. Processor 1 determines this display.

---
Parameters

Parameter list

Dependency: Refer to: r9871
Note: STO: Safe Torque Off

r9772.0...20  CO/BO: SI status (processor 1) / SI status P1

CU240E-2  
CU240E-2_DP  
CU240E-2_DP_F  
CU240E-2_F  
CU240E-2_PN_F  
CU240E-2 PN

Access level: 2  Calculated: -  Data type: Unsigned32
Can be changed: -  Scaling: -  Data set: -
Units group: -  Unit selection: -

Description: Displays the Safety Integrated status on processor 1.

Bit field: Bit | Signal name | 1 signal | 0 signal | FP
| 00 | STO selected on processor 1 | Yes | No | 2810 |
| 01 | STO active on processor 1 | Yes | No | 2810 |
| 09 | STOP A cannot be acknowledged, active | Yes | No | 2802 |
| 10 | STOP A active | Yes | No | 2802 |
| 15 | STOP F active | Yes | No | 2802 |
| 16 | STO cause: Safety comm. mode | Yes | No | - |
| 17 | STO cause selection via terminal (Basic Functions) | Yes | No | - |
| 18 | STO cause: Selection via motion monitoring functions | Yes | No | - |
| 19 | STO cause actual value missing or safe pulse cancellation | Yes | No | - |
| 20 | STO cause selection PROFIsafe (Basic Functions) | Yes | No | - |

Dependency: Refer to: r9872
Note: Re bit 00: When STO is selected, the cause is displayed in bits 16 ... 20.
Re bit 18: When the bit is set, STO is selected via PROFIsafe.
Re bit 19: For the drive-integrated motion monitoring functions, due to OFF2, no actual value sensing possible.

r9773.0...31  CO/BO: SI status (processor 1 + processor 2) / SI status P1+P2

CU240E-2  
CU240E-2_DP  
CU240E-2_DP_F  
CU240E-2_F  
CU240E-2_PN_F  
CU240E-2 PN

Access level: 2  Calculated: -  Data type: Unsigned32
Can be changed: -  Scaling: -  Data set: -
Units group: -  Unit selection: -

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

Description: Displays the Safety Integrated status on the drive (processor 1 + processor 2).

Bit field: Bit | Signal name | 1 signal | 0 signal | FP
| 00 | STO selected in drive | Yes | No | 2804 |
| 01 | STO active in drive | Yes | No | 2804 |
| 31 | Shutdown paths must be tested | Yes | No | 2810 |

Note: This status is formed from the AND operation of the relevant status of the two monitoring channels.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9776</td>
<td>SI diagnostics / SI diagnostics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 4</td>
<td>Calculated: -</td>
<td>Data type: Unsigned32</td>
<td></td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</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>
<tr>
<td>The parameter is used for diagnostics.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bit field:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bit</td>
<td>Signal name</td>
<td>1 signal</td>
<td>0 signal</td>
</tr>
<tr>
<td>00</td>
<td>Safety parameter changed POWER ON</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re bit 00 = 1:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least one Safety parameter has been changed that will only take effect after a POWER ON.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r9780</td>
<td>SI monitoring clock cycle (processor 1) / SI mon_clk cyc P1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</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>
<tr>
<td>Displays the clock cycle time for the Safety Integrated Basic Functions on processor 1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r9781[0...1]</td>
<td>SI checksum to check changes (processor 1) / SI chg chksm P1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Unsigned32</td>
<td></td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</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>
<tr>
<td>Displays the checksum for tracking changes for Safety Integrated.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>These are additional checksums that are created to track changes (fingerprint for the “safety logbook” functionality) to safety parameters (that are relevant for checksums).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[0] = SI checksum to track functional changes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[1] = SI checksum to track hardware-specific changes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refer to: p9601, p9729, p9799</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refer to: F01690</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Parameter List

### r9782[0...1]
**SI time stamp to check changes (processor 1) / SI chg t P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Scaling</th>
<th>Units group</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9782[0]</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>r9782[1]</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

- **Min**: - [h]  
- **Max**: - [h]  
- **Factory setting**: - [h]

**Description:**
Displays the time stamps for the checksums for tracking changes for Safety Integrated.

The time stamps for the checksums for tracking changes (fingerprint for the "safety logbook" functionality) made to safety parameters are saved in parameters p9781[0] and p9781[1].

**Index:**
- [0] = SI time stamp for checksum to track functional changes  
- [1] = SI time stamp for checksum to track hardware-specific changes

**Dependency:**
Refer to: p9601, p9729, p9799

Refer to: F01690

### r9784[0...1]
**SI Motion diagnostics acceleration encoderless / SI Mtn diag a sl**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Scaling</th>
<th>Units group</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9784[0]</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>r9784[1]</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

- **Min**: - [rev/s²]  
- **Max**: - [rev/s²]  
- **Factory setting**: - [rev/s²]

**Description:**
Display to diagnose acceleration values of the encoderless actual values sensing.

Re index 0:
Shows the parameterized acceleration values of p9389/p9589.

Re index 1:
Shows the actually measured acceleration values of the encoderless actual value sensing

**Index:**
- [0] = Setpoint acceleration value  
- [1] = Actual acceleration value

**Dependency:**
Refer to: p9389, p9599

### r9785[0...1]
**SI Motion diagnostics absolute current value encoderless / SI Mtn diag I sl**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Scaling</th>
<th>Units group</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9785[0]</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>6_3</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>r9785[1]</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>6_3</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

- **Min**: - [mA]  
- **Max**: - [mA]  
- **Factory setting**: - [mA]

**Description:**
Display to diagnose currents of the encoderless actual value sensing.

Re index 0:
Shows the parameterized minimum current of p9388/p9588.

Re index 1:
Shows the actually measured current of the encoderless actual value sensing

**Index:**
- [0] = Minimum current parameterized  
- [1] = Minimum current measured

**Dependency:**
Refer to: p9388, p9598
### r9786[0...2]
**SI Motion diagnostics plausibility angle value encoderless / SI mtn diag phi sl**

<table>
<thead>
<tr>
<th>Parameter Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PW_F</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Units group:**

- Min: ['']
- Max: ['']
- Factory setting: ['']

**Description:**
Display to diagnose the plausibility angle of the encoderless actual value sensing.

Re index 0:
- Shows the actual plausibility angle
Re index 1:
- Shows the actual plausibility voltage angle
Re index 2:
- Shows the actual current angle

**Index:**
- [0] = Actual plausibility angle
- [1] = Actual voltage angle
- [2] = Actual current angle

**Dependency:**
Refer to: p9385, p9585

### r9787
**SI Motion possible error tolerance sensorless / SI Mtn poss tol sl**

<table>
<thead>
<tr>
<th>Parameter Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PW_F</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Units group:**

- Min: [rpm]
- Max: [rpm]
- Factory setting: [rpm]

**Description:**
Displays the actual velocity deviation of the encoderless actual value sensing that is obtained when setting p9585/p9385.

**Dependency:**
Refer to: p9385, p9585

**Note:**
- For linear axes, the following unit applies: millimeters per minute
- For rotary axes, the following unit applies: revolutions per minute

### r9794[0...19]
**SI crosswise comparison list (processor 1) / SI CDC_list P1**

<table>
<thead>
<tr>
<th>Parameter Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2</td>
<td>3</td>
<td>Unsigned16</td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PW</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PW_F</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PW_F</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_PW</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Units group:**

- Min: -
- Max: -
- Factory setting: -

**Description:**
Displays the numbers of the data items that are currently being compared crosswise on processor 1. The content of the list of crosswise-compared data is dependent upon the particular application.

**Note:**
- Example:
  - r9794[0] = 1 (monitoring clock cycle)
  - r9794[1] = 2 (enable safety functions)
  - r9794[2] = 3 (F-DI changeover, tolerance time)
  - ...
- A complete list of numbers for crosswise-compared data items appears in fault F01611.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r9795</strong></td>
<td>SI diagnostics STOP F (processor 1) / SI diag STOP F P1</td>
<td>Displays the number of the cross-compared data item which caused STOP F on processor 1.</td>
<td>Refer to: F01611</td>
</tr>
<tr>
<td>CU240E-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

| **r9798** | SI actual checksum SI parameters (processor 1) / SI act chksm P1 | Displays the checksum for the Safety Integrated parameters checked using checksums on processor 1 (actual checksum). | Refer to: p9799, r9898 |
| CU240E-2 | | | |
| CU240E-2_DP | | | |
| CU240E-2_DP_F | | | |
| CU240E-2_F | | | |
| CU240E-2_PN_F | | | |
| CU240E-2_PN | | | |

<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>

| **p9799** | SI setpoint checksum SI parameters (processor 1) / SI setp_chksm P1 | Sets the checksum for the Safety Integrated parameters checked using checksums on processor 1 (setpoint checksum). | Refer to: r9798, p9899 |
| CU240E-2 | | | |
| CU240E-2_DP | | | |
| CU240E-2_DP_F | | | |
| CU240E-2_F | | | |
| CU240E-2_PN_F | | | |
| CU240E-2_PN | | | |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
<td>0000 hex</td>
</tr>
</tbody>
</table>

| **p9801** | SI enable, functions integrated in the drive (processor 2) / SI enable fct P2 | Sets the enable signals for safety functions on processor 2 that are integrated in the drive. Not all of the settings listed below will be permissible, depending on the Control Unit being used: 0000: Safety functions integrated in the drive inhibited (no safety function). | |
| PM240 | | | |
| PM250 | | | |
| PM260 | | | |
| CU240E-2 | | | |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0000 bin</td>
</tr>
</tbody>
</table>
0001: Basic functions are enabled via onboard terminals (permissible for r9871.0 = 1).
0004: Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9871.5 = 1).
0005: Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9871.5 = 1).
0008: Basic functions are enabled via PROFIsafe (permissible for r9871.6 = 1).
0009: Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9871.6 = 1).
000C: Extended functions are enabled via PROFIsafe (permissible for r9871.4 = 1).
000D: Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9871.4 = 1).

Dependency: Refer to: p9601, r9871
Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.
Note: A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input.
STO: Safe Torque Off

### Description:
Sets the enable signals for safety functions on processor 2 that are integrated in the drive.
Not all of the settings listed below will be permissible, depending on the Control Unit being used:

0000: Safety functions integrated in the drive inhibited (no safety function).
0001: Basic functions are enabled via onboard terminals (permissible for r9871.0 = 1).
0004: Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9871.5 = 1).
0005: Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9871.5 = 1).
0008: Basic functions are enabled via PROFIsafe (permissible for r9871.6 = 1).
0009: Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9871.6 = 1).
000C: Extended functions are enabled via PROFIsafe (permissible for r9871.4 = 1).
000D: Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9871.4 = 1).
Parameters

Parameter list

---

<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>Enable STO via terminals (processor 2)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>2810</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Enable drive_integr motion_monitoring functions (processor 2)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Enable PROFIsafe (processor 2)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Dependency: Refer to: p9601, r9871

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change only becomes effective after a POWER ON.

F-DI: Failsafe Digital Input.
STO: Safe Torque Off

---

<table>
<thead>
<tr>
<th>p9801</th>
<th>SI enable, functions integrated in the drive (processor 2) / SI enable fct P2</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM240</td>
<td>Access level: 3 Calculated: - Data type: Unsigned16</td>
</tr>
<tr>
<td>PM250</td>
<td>Can be changed: C(95) Scaling: - Data set: -</td>
</tr>
<tr>
<td>PM260</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td></td>
</tr>
<tr>
<td>CU240E-2 PN</td>
<td></td>
</tr>
</tbody>
</table>

Min | Max | Factory setting |
- | - | 0000 bin |

Description: Sets the enable signals for safety functions on processor 2 that are integrated in the drive. Not all of the settings listed below will be permissible, depending on the Control Unit being used:

0000: Safety functions integrated in the drive inhibited (no safety function).
0001: Basic functions are enabled via onboard terminals (permissible for r9871.0 = 1).
0004: Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9871.5 = 1).
0005: Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9871.5 = 1).
0008: Basic functions are enabled via PROFIsafe (permissible for r9871.6 = 1).
0009: Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9871.6 = 1).
000C: Extended functions are enabled via PROFIsafe (permissible for r9871.4 = 1).
000D: Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9871.4 = 1).

Dependency: Refer to: p9601, r9871

Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note: A change only becomes effective after a POWER ON.
F-DI: Failsafe Digital Input.
STO: Safe Torque Off
### Parameter List

#### p9801
**Description:**
Sets the enable signals for safety functions on processor 2 that are integrated in the drive. Not all of the settings listed below will be permissible, depending on the Control Unit being used:
- **0000:** Safety functions integrated in the drive inhibited (no safety function).
- **0001:** Basic functions are enabled via onboard terminals (permissible for r9871.0 = 1).
- **0004:** Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9871.5 = 1).
- **0005:** Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9871.5 = 1).
- **0008:** Basic functions are enabled via PROFIsafe (permissible for r9871.6 = 1).
- **0009:** Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9871.6 = 1).
- **000C:** Extended functions are enabled via PROFIsafe (permissible for r9871.4 = 1).
- **000D:** Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9871.4 = 1).

**Dependency:**
Refer to: p9601, r9871

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
A change only becomes effective after a POWER ON.
- **F-DI:** Failsafe Digital Input.
- **STO:** Safe Torque Off

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Enable STO via terminals (processor 2)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>2810</td>
</tr>
<tr>
<td>02</td>
<td>Enable drive_integr motion_monitoring functions (processor 2)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
</tbody>
</table>

#### p9810
**Description:**
Sets the PROFIsafe address on processor 2.

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000 hex</td>
<td>FFFE hex</td>
<td>0000 hex</td>
</tr>
</tbody>
</table>
Description:
Sets the tolerance time for the changeover of the failsafe digital input for STO on processor 2.
An F-DI changeover is not effective simultaneously due to the different runtimes in the two monitoring channels.
After an F-DI changeover, dynamic data is not subject to a crosswise data comparison during this tolerance time.

Dependency:
Refer to: p9650

Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note:
For a crosswise data comparison between p9650 and p9850, a difference of one Safety monitoring clock cycle is tolerated.
The parameterized time is rounded internally to an integer multiple of the monitoring clock cycle.
F-DI: Failsafe Digital Input

---

Description:
Sets the debounce time for the failsafe digital inputs used to control the "STO" function.
The debounce time is rounded to whole milliseconds.

Dependency:
Refer to: p9651

Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note:
The debounce time is rounded to whole milliseconds. It specifies the maximum duration of a fault pulse at the failsafe digital inputs with no reaction/influence on the selection or deselection of the Safety Basic Functions.
Example:
Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.
Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

---

Description:
Displays the supported Safety Integrated monitoring functions.
Processor 2 determines this display.

Dependency:
Refer to: r9771

Note:
STO: Safe Torque Off
### r9871 SI common functions (processor 2) / SI common fct P2

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>CU240E-2_DP_F</th>
<th>CU240E-2_PN_F</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Can be changed:** -

**Scaling:** -

**Units group:** -

**Unit selection:** -

<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 supported Safety Integrated monitoring functions. Processor 2 determines this display.

**Dependency:**
Refer to: r9771

**Note:**
STO: Safe Torque Off

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO supported via terminals</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>02</td>
<td>Extended Functions supported</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>04</td>
<td>Extended Functions PROFIsafe supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Basic Functions PROFIsafe supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Extended Functions encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Extended Functions SDI supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Extended Functions SSM encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

### r9871 SI common functions (processor 2) / SI common fct P2

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>CU240E-2_DP</th>
<th>CU240E-2_PN</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
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<td></td>
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</tbody>
</table>

**Can be changed:** -

**Scaling:** -

**Units group:** -

**Unit selection:** -

<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 supported Safety Integrated monitoring functions. Processor 2 determines this display.

**Dependency:**
Refer to: r9771

**Note:**
STO: Safe Torque Off

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO supported via terminals</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>06</td>
<td>Basic Functions PROFIsafe supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Extended Functions encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Extended Functions SDI supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Extended Functions SSM encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

### r9871 SI common functions (processor 2) / SI common fct P2

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>CU240E-2_F</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
<td></td>
</tr>
</tbody>
</table>

**Can be changed:** -

**Scaling:** -

**Units group:** -

**Unit selection:** -

<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 supported Safety Integrated monitoring functions. Processor 2 determines this display.

**Dependency:**
Refer to: r9771

**Note:**
STO: Safe Torque Off

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO supported via terminals</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>02</td>
<td>Extended Functions supported</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>05</td>
<td>Extended Functions in drive supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Extended Functions encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Extended Functions SDI supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Extended Functions SSM encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
**Parameters**

**Parameter list**

**Dependency:** Refer to: r9771

**Note:** STO: Safe Torque Off

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r9872.0...20</strong></td>
<td>CO/BO: SI status (processor 2) / SI Status P2</td>
</tr>
<tr>
<td>CU240E-2</td>
<td>Displays the Safety Integrated status on processor 2.</td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td><strong>Dependency:</strong> Refer to: r9772</td>
</tr>
<tr>
<td>CU240E-2_DP_F</td>
<td><strong>Note:</strong></td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td>Re bit 00: When STO is selected, the cause is displayed in bits 16 ... 20.</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Re bit 18: When the bit is set, STO is selected via PROFIsafe.</td>
</tr>
<tr>
<td>CU240E-2 PN</td>
<td></td>
</tr>
</tbody>
</table>

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>0 signal</th>
<th>1 signal</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO selected on processor 2</td>
<td>Yes</td>
<td>No</td>
<td>2810</td>
</tr>
<tr>
<td>01</td>
<td>STO active on processor 2</td>
<td>Yes</td>
<td>No</td>
<td>2810</td>
</tr>
<tr>
<td>09</td>
<td>STOP A cannot be acknowledged, active</td>
<td>Yes</td>
<td>No</td>
<td>2802</td>
</tr>
<tr>
<td>10</td>
<td>STOP A active</td>
<td>Yes</td>
<td>No</td>
<td>2802</td>
</tr>
<tr>
<td>15</td>
<td>STOP F active</td>
<td>Yes</td>
<td>No</td>
<td>2802</td>
</tr>
<tr>
<td>16</td>
<td>STO cause: Safety comm. mode</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>STO cause selection via terminal (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>STO cause: Selection via motion monitoring functions</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>STO cause selection PROFIsafe (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r9798, p9899

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r9898</strong></td>
<td>SI actual checksum SI parameters (processor 2) / SI act_chksm P2</td>
</tr>
<tr>
<td>CU240E-2</td>
<td>Displays the checksum for the Safety Integrated parameters checked using checksums on processor 2 (actual checksum).</td>
</tr>
<tr>
<td>CU240E-2_DP</td>
<td><strong>Dependency:</strong> Refer to: r9798, p9899</td>
</tr>
</tbody>
</table>
### p9899  SI setpoint checksum SI parameters (processor 2) / SI setp_chksm P2

<table>
<thead>
<tr>
<th>CU240E-2</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Min Max Factory setting
0000 hex FFFF FFFF hex 0000 hex

**Description:**
Sets the checksum for the Safety Integrated parameters checked using checksums on processor 2 (setpoint checksum).

**Dependency:**
Refer to: p9799, r9898

### r9925[0...99]  Firmware file incorrect / FW file incorr

| Access level: 3 | Calculated: - | Data type: Unsigned8 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |

#### Min Max Factory setting
- - -

**Description:**
Displays the directory and name of the file whose status as shipped from the factory was identified as impermissible.

**Dependency:**
Refer to: r9926
Refer to: A01016

**Note:**
The directory and name of the file is displayed in the ASCII code.

### r9926  Firmware check status / FW check status

| Access level: 3 | Calculated: - | Data type: Unsigned8 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |

#### Min Max Factory setting
- - -

**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
Refer to: A01016

### p9930[0...8]  System logbook activation / SYSLOG activation

| Access level: 4 | Calculated: - | Data type: Unsigned8 |
| Can be changed: U, T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |

#### Min Max Factory setting
0 255 0

**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)
### Parameters

#### Parameter list

**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.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9931[0...129]</td>
<td>System logbook module selection / SYSLOG mod select.</td>
</tr>
<tr>
<td>Access level: 4</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: Unsigned32</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0000 hex</td>
</tr>
<tr>
<td>Description:</td>
<td>Only for service purposes.</td>
</tr>
</tbody>
</table>

| p9932 | Save system logbook EEPROM / SYSLOG EEPROM save |
| Access level: 4 | Calculated: - |
| Can be changed: U, T | Scaling: - |
| Units group: - | Data type: Unsigned8 |
| Min | Max |
| 0 | 255 |
| Factory setting | 0 |
| Description: | Only for service purposes. |

<p>| r9935.0 | BO: POWER ON delay signal / POWER ON t_delay |
| Access level: 4 | Calculated: - |
| Can be changed: - | Scaling: - |
| Units group: - | Data type: Unsigned8 |</p>
<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
<tr>
<td>Description:</td>
<td>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.</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>POWER ON delay signal</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

| r9975[0...7] | System utilization measured / Sys util meas |
| Access level: 4 | Calculated: - |
| Can be changed: - | Scaling: - |
| Units group: - | Data type: FloatingPoint32 |
| Min | Max |
| - [%] | - [%] |
| Factory setting | - [%] |
| Description: | Displays the measured system utilization. The higher the value displayed, the higher the system utilization. |

<table>
<thead>
<tr>
<th>Index:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[0] = Computing time utilization (min)</td>
<td></td>
</tr>
<tr>
<td>[1] = Computing time utilization (averaged)</td>
<td></td>
</tr>
<tr>
<td>[2] = Computing time utilization (max)</td>
<td></td>
</tr>
<tr>
<td>[3] = Largest total utilization (min)</td>
<td></td>
</tr>
<tr>
<td>[4] = Largest total utilization (averaged)</td>
<td></td>
</tr>
<tr>
<td>[5] = Largest total utilization (max)</td>
<td></td>
</tr>
<tr>
<td>[6] = Reserved</td>
<td></td>
</tr>
<tr>
<td>[7] = Reserved</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependency:</th>
<th>Refer to: r9976</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Refer to: F01054, F01205</td>
</tr>
</tbody>
</table>

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SINAMICS G120 CU240B/E-2 Control Units List Manual (LH11), 01/2012
**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).

### r9976[0...7]  
**System utilization / Sys util**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>- [%]</td>
<td>Max</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

**Description:**
Displays the system utilization.

If the utilization is greater than 100%, fault F01054 is output.

**Index:**
- [0] = Reserved
- [1] = Computing time utilization
- [2] = Reserved
- [3] = Reserved
- [4] = Reserved
- [5] = Largest total utilization
- [6] = Reserved
- [7] = Reserved

**Dependency:**
Refer to: F01054, F01205

**Note:**
Re index 1:
The value shows the total computing time load of the system.

Re index 5:
The total utilization is determined using all sampling times used. The largest total utilization is mapped here. The sampling time with the largest total utilization is displayed in r9979.

Total utilization:
Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

### r9999[0...99]  
**Software error internal supplementary diagnostics / SW_err int diag**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>4</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Diagnostics parameter to display additional information for internal software errors.

**Note:**
Only for internal Siemens troubleshooting.

### p10002  
**SI discrepancy monitoring time (processor 1) / SI discrp t_mon P1**

<table>
<thead>
<tr>
<th>CU240E-2_DP_F</th>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C(95)</td>
<td>Scaling:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>1.00 [ms]</td>
<td>Max</td>
<td>2000.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the monitoring time for the discrepancy for the digital inputs.

The signal states at the two associated digital inputs (F-DI) must assume the same state within this monitoring time.

**Dependency:**
Refer to: p10102

**Note:**
F-DI: Failsafe Digital Input
### p10006
**SI acknowledgement internal event F-DI (processor 1) / SI ackn int evt P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>Integer16</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Units group:** -

**Units selection:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>255</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Select a fail-safe digital input for the signal "acknowledge internal event" (internal fault). The falling edge at this input resets the status "internal event" in the drives. The rising edge at this input acknowledges any existing discrepancy errors.

**Value:**
- 0: Statically active
- 1: F-DI 0
- 2: F-DI 1
- 3: F-DI 2
- 255: Statically inactive

**Dependency:**
Refer to: p10106
Refer to: A01666, A30666

**Note:**
The values "static active" and "static inactive" result in an inactive function of the safe acknowledgment.

F-DI: Failsafe Digital Input

### p10017
**SI digital inputs debounce time (processor 1) / SI DI t_debounceP1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Units group:** -

**Units selection:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [ms]</td>
<td>100.00 [ms]</td>
<td>1.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the debounce time for digital inputs. The debounce time is accepted rounded off to whole milliseconds. The debounce time acts on the following digital inputs:
- Fail-safe digital inputs (F-DI).
- Single-channel digital inputs (DI).
- Single-channel digital input 2 (DI 2, read back input for the forced checking procedure).

**Dependency:**
Refer to: p10117

**Note:**
Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.
Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.
The debounce result can be read in r10051.

### p10022
**SI STO input terminal (processor 1) / SI STO F-DI P1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_DP_F</td>
<td>3</td>
<td>-</td>
<td>Integer16</td>
<td>C(95)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU240E-2_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Units group:** -

**Units selection:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>255</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the fail-safe digital input (F-DI) for the "STO" function.

**Value:**
- 0: Statically active
- 1: F-DI 0
- 2: F-DI 1
- 3: F-DI 2
- 255: Statically inactive

**Dependency:**
Refer to: p10122
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p10023</td>
<td>SI SS1 input terminal (processor 1) / SI SS1 F-DI P1</td>
<td>Sets the fail-safe digital input (F-DI) for the &quot;SS1&quot; function.</td>
<td>0: Statically active, 1: F-DI 0, 2: F-DI 1, 3: F-DI 2, 255: Statically inactive</td>
</tr>
<tr>
<td>p10026</td>
<td>SI SLS input terminal (processor 1) / SI SLS F-DI P1</td>
<td>Sets the fail-safe digital input (F-DI) for the &quot;SLS&quot; function.</td>
<td>0: Statically active, 1: F-DI 0, 2: F-DI 1, 3: F-DI 2, 255: Statically inactive</td>
</tr>
</tbody>
</table>

**Note:**
- If value = 0: No terminal assigned, safety function always active.
- If value = 255: No terminal assigned, safety function always inactive.

**F-DI:** Failsafe Digital Input

**STO:** Safe Torque Off

---

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SINAMICS G120 CU240B/E-2 Control Units List Manual (LH11), 01/2012
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p10030</td>
<td>SI SDI positive input terminal (processor 1) / SI SDI pos F-DI P1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Integer16</td>
</tr>
<tr>
<td></td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td>Unit selection: -</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>255</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td>Sets the fail-safe digital input (F-DI) for the &quot;SDI positive&quot; function.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Value:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0:</td>
<td>Statically active</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:</td>
<td>F-DI 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2:</td>
<td>F-DI 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3:</td>
<td>F-DI 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>255:</td>
<td>Statically inact</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If value = 0:</td>
<td>No terminal assigned, safety function always active.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If value = 255:</td>
<td>No terminal assigned, safety function always inactive.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F-DI: Failsafe Digital Input</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SDI: Safe Direction (safe motion direction)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p10031</td>
<td>SI SDI negative input terminal (processor 1) / SI SDI neg F-DI P1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Integer16</td>
</tr>
<tr>
<td></td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td>Unit selection: -</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>255</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td>Sets the fail-safe digital input (F-DI) for the &quot;SDI negative&quot; function.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Value:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0:</td>
<td>Statically active</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1:</td>
<td>F-DI 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2:</td>
<td>F-DI 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3:</td>
<td>F-DI 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>255:</td>
<td>Statically inact</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>If value = 0:</td>
<td>No terminal assigned, safety function always active.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If value = 255:</td>
<td>No terminal assigned, safety function always inactive.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F-DI: Failsafe Digital Input</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SDI: Safe Direction (safe motion direction)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r10049</td>
<td>SI F-DI monitoring status (processor 1) / SI F-DI status P1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Unsigned32</td>
</tr>
<tr>
<td></td>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td>Unit selection: -</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></td>
<td><strong>Description:</strong></td>
<td>Displays the monitoring status of the fail-safe digital inputs (F-DI). The F-DIs that are being used by the Safety Integrated functions are displayed. If the module used has fewer than 3 F-DIs, &quot;Freely available&quot; is displayed for the F-DIs which are not in use.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Bit field:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bit</td>
<td>Signal name</td>
<td>1 signal</td>
</tr>
<tr>
<td></td>
<td>00</td>
<td>F-DI 0</td>
<td>Safety monitored</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>F-DI 1</td>
<td>Safety monitored</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>F-DI 2</td>
<td>Safety monitored</td>
</tr>
</tbody>
</table>
Dependency:  
p10006 / p10106  
p10022 / p10122  
p10023 / p10123  
p10026 / p10126  
p10030 / p10130  
p10031 / p10131  
p10050 / p10150  
Refer to: r10149

### p10050

**SI PROFIsafe F-DI transfer (processor 1) / SI Ps F-DI tran P1**

- **CU240E-2_DP_F**
  - Access level: 3  
  - Can be changed: C(95)
- **CU240E-2_PN_F**
  - Units group: -  
  - Unit selection: -

**Description:**  
Setting for the transfer and evaluation of failsafe digital inputs (F-DI) via PROFIsafe. The safe state of the selected F-DIs is transferred to the F-control via PROFIsafe. The F-DIs are monitored for discrepancies. Discrepancy faults can be acknowledged via PROFIsafe.

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>F-DI 0 processor 1</td>
<td>Transfer</td>
<td>No transfer</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>F-DI 1 processor 1</td>
<td>Transfer</td>
<td>No transfer</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>F-DI 2 processor 1</td>
<td>Transfer</td>
<td>No transfer</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**  
Refer to: p10150

**Note:**  
F-DI: Failsafe Digital Input

### r10051.0...2

**CO/BO: SI digital inputs status (processor 1) / SI DI status P1**

- **CU240E-2_DP_F**
  - Access level: 3  
  - Can be changed: -
- **CU240E-2_F**
  - Units group: -  
  - Unit selection: -
- **CU240E-2_PN_F**
  - Min | Max | Factory setting |

**Description:**  
Displays the single-channel, logical, and debounced status of the fail-safe digital inputs (F-DI). The parameter is updated in the SI Motion monitoring clock cycle.

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>F-DI 0 processor 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>F-DI 1 processor 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>F-DI 2 processor 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**  
Refer to: p9501, p9601, p10017, p10050, r10151

**Note:**  
If a safety function is assigned to an input (e.g. via p10022), then the following applies:  
- logical "0": Safety function is selected  
- logical "1": Safety function is de-selected  

The interrelationship between the logical level and the external voltage level at the input depends on the parameterization (refer to p10040) of the input as either NC or NO contact and is aligned to the use of a safety function:  
With 24 V at the input, NC contacts have a logical "1" level, for 0 V at the input, a logical "0" level.  
This means that an NC/NC contact parameterization of 0 V at both inputs of the F-DI selects the safety function, for 24 V at both inputs, de-selects the safety function.  
With 24 V at the input, NO contacts have a logical "0" level, for 0 V at the input, a logical "1" level.  
This means that for an NC/NO contact parameterization, the level 0 V/24 V selects the safety function, the level 24 V/0 V de-selects the safety function.  
F-DI: Failsafe Digital Input  
The state of parameter r10151 is delayed by one monitoring clock cycle in relation to r10051.
The parameter is only updated in the following cases:
- If the Safety Extended Functions are enabled by means of activation via F-DI.
- If transfer of the F-DIs via PROFIsafe is enabled (see p9501).
In this case only the F-DIs transferred for PROFIsafe are displayed and updated (see p10050/p10150). All F-DIs which have not been transferred have a static zero value.

**p10102** SI discrepancy monitoring time (processor 2) / SI discr t_mon P2

<table>
<thead>
<tr>
<th>CU240E-2_DP_F</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_F</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 [ms]</td>
<td>2000.00 [ms]</td>
<td>500.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the monitoring time for the discrepancy for the digital inputs.

**Dependency:**
Refer to: p10002

**Note:**
F-DI: Failsafe Digital Input

**p10106** SI acknowledgement internal event F-DI (processor 2) / SI ackn int evt P2

<table>
<thead>
<tr>
<th>CU240E-2_DP_F</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_F</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>255</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Select a fail-safe digital input for the signal "acknowledge internal event" (internal fault).
The falling edge at this input resets the status "internal event" in the drives.

**Value:**
- 0: Statically active
- 1: F-DI 0
- 2: F-DI 1
- 3: F-DI 2
- 255: Statically inact

**Dependency:**
Refer to: p10006

**Note:**
The values "static active" and "static inactive" result in an inactive function of the safe acknowledgment.

**F-DI: Failsafe Digital Input**

**p10117** SI digital inputs debounce time (processor 2) / SI DI t_debounceP2

<table>
<thead>
<tr>
<th>CU240E-2_DP_F</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU240E-2_F</td>
<td>Can be changed: C(95)</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>CU240E-2_PN_F</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [ms]</td>
<td>100.00 [ms]</td>
<td>1.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the debounce time for digital inputs.
The debounce time acts on the following digital inputs:
- Fail-safe digital inputs (F-DI).
- Single-channel digital input 2 (DI 2, read back input for the forced checking procedure).
The debounce time is accepted rounded off to whole milliseconds.

**Dependency:**
Refer to: p10017

**Note:**
Example:
Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.
Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.
The debounce result can be read in r10151.
### p10122  
**SI STO input terminal (processor 2) / SI STO F-DI P2**

- **CU240E-2_DP_F**
- **CU240E-2_F**
- **CU240E-2_PN_F**

**Description:** Sets the fail-safe digital input (F-DI) for the "STO" function.

**Value:**
- 0: Statically active
- 1: F-DI 0
- 2: F-DI 1
- 3: F-DI 2
- 255: Statically inact

**Dependency:**
- Refer to: p10022

**Note:**
- If value = 0: No terminal assigned, safety function always active.
- If value = 255: No terminal assigned, safety function always inactive.

**F-DI:** Failsafe Digital Input  
**STO:** Safe Torque Off

---

### p10123  
**SI SS1 input terminal (processor 2) / SI SS1 F-DI P2**

- **CU240E-2_DP_F**
- **CU240E-2_F**
- **CU240E-2_PN_F**

**Description:** Sets the fail-safe digital input (F-DI) for the "SS1" function.

**Value:**
- 0: Statically active
- 1: F-DI 0
- 2: F-DI 1
- 3: F-DI 2
- 255: Statically inact

**Dependency:**
- Refer to: p10023

**Note:**
- If value = 0: No terminal assigned, safety function always active.
- If value = 255: No terminal assigned, safety function always inactive.

**F-DI:** Failsafe Digital Input  
**SS1:** Safe Stop 1

---

### p10126  
**SI SLS input terminal (processor 2) / SI SLS F-DI P2**

- **CU240E-2_DP_F**
- **CU240E-2_F**
- **CU240E-2_PN_F**

**Description:** Sets the fail-safe digital input (F-DI) for the "SLS" function.

**Value:**
- 0: Statically active
- 1: F-DI 0
- 2: F-DI 1
- 3: F-DI 2
- 255: Statically inact

**Dependency:**
- Refer to: p10026
Note: If value = 0:
No terminal assigned, safety function always active.
If value = 255:
No terminal assigned, safety function always inactive.

F-DI: Failsafe Digital Input
SLS: Safety-Limited Speed

### p10130 SI SDI positive input terminal (processor 2) / SI SDI pos DI P2

| CU240E-2_DP_F | Access level: 3 | Calculated: - | Data type: Integer16 |
| CU240E-2_F | Can be changed: C(95) | Scaling: - | Data set: - |
| CU240E-2_PN_F | Units group: - | Unit selection: - | |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>255</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the fail-safe digital input (F-DI) for the "SDI positive" function.

**Value:**
- 0: Statically active
- 1: F-DI 0
- 2: F-DI 1
- 3: F-DI 2
- 255: Statically inact

**Note:**
- If value = 0:
  No terminal assigned, safety function always active.
- If value = 255:
  No terminal assigned, safety function always inactive.

**F-DI:** Failsafe Digital Input
**SDI:** Safe Direction (safe motion direction)

### p10131 SI SDI negative input terminal (processor 2) / SI SDI neg DI P2

| CU240E-2_DP_F | Access level: 3 | Calculated: - | Data type: Integer16 |
| CU240E-2_F | Can be changed: C(95) | Scaling: - | Data set: - |
| CU240E-2_PN_F | Units group: - | Unit selection: - | |

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>255</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the fail-safe digital input (F-DI) for the "SDI negative" function.

**Value:**
- 0: Statically active
- 1: F-DI 0
- 2: F-DI 1
- 3: F-DI 2
- 255: Statically inact

**Note:**
- If value = 0:
  No terminal assigned, safety function always active.
- If value = 255:
  No terminal assigned, safety function always inactive.

**F-DI:** Failsafe Digital Input
**SDI:** Safe Direction (safe motion direction)
**r10149 Parameter list**

**Description:**
Displays the monitoring status of the fail-safe digital inputs (F-DI).

The F-DIs that are being used by the Safety Integrated functions are displayed.

If the module used has fewer than 3 F-DIs, "Freely available" is displayed for the F-DIs which are not in use.

**Dependency:**
p10006 / p10106
p10022 / p10122
p10023 / p10123
p10026 / p10126
p10030 / p10130
p10031 / p10131
p10050 / p10150
Refer to: r10049

**Description:**
Setting for the transfer and evaluation of failsafe digital inputs (F-DI) via PROFIsafe.

The safe state of the selected F-DIs is transferred to the F-control via PROFIsafe. The F-DIs are monitored for discrepancies. Discrepancy faults can be acknowledged via PROFIsafe.

**Dependency:**
Refer to: p10050

**Note:**
F-DI: Failsafe Digital Input

---

**r10150 Parameter list**

**Description:**
Displays the single-channel, logical, and debounced status of the fail-safe digital inputs (F-DI).

The parameter is updated in the SI Motion monitoring clock cycle.

**Dependency:**
Refer to: p9501, p9601, p10117, p10150

---

**r10151.0...2 Parameter list**

**Description:**
Displays the monitoring status of the fail-safe digital inputs (F-DI).

The parameter is updated in the SI Motion monitoring clock cycle.

**Dependency:**
Refer to: p9501, p9601, p10117, p10150
Note:
F-DI: Failsafe Digital Input
If a safety function is assigned to an input (e.g. via p10122), then the following applies:
- logical "0": Safety function is selected
- logical "1": Safety function is de-selected

The interrelationship between the logical level and the external voltage level at the input depends on the parameter-
ization (refer to p10140) of the input as either NC or NO contact and is aligned to the use of a safety function:

With 24 V at the input, NC contacts have a logical "1" level, for 0 V at the input, a logical "0" level.
This means that an NC/NC contact parameterization of 0 V at both inputs of the F-DI selects the safety function, for
24 V at both inputs, de-selects the safety function.

With 24 V at the input, NO contacts have a logical "0" level, for 0 V at the input, a logical "1" level.
This means that for an NC/NO contact parameterization, the level 0 V/24 V selects the safety function, the level 24
V/0 V de-selects the safety function.

The state of parameter r10151 is delayed by one monitoring clock cycle in relation to r10051.
The parameter is only updated in the following cases:
- If the Safety Extended Functions are enabled by means of activation via F-DI.
- If transfer of the F-DIs via PROFIsafe is enabled (see p9501).

In this case only the F-DIs transferred for PROFIsafe are displayed and updated (see p10050/p10150). All F-DIs
which have not been transferred have a static zero value.

r20001[0...9] Run-time group sampling time / RTG sampling time
Access level: 3 Calculated: - Data type: FloatingPoint32
Can be changed: - Scaling: - Data set: -
Units group: - Unit selection: -
Min: - [ms] Max: - [ms] Factory setting: - [ms]
Description: Displays the current sampling time of the run-time group 0 to 9.
Index:
[0] = Run-time group 0
[1] = Run-time group 1
[3] = Run-time group 3
[4] = Run-time group 4
[5] = Run-time group 5
[6] = Run-time group 6
[7] = Run-time group 7
[8] = Run-time group 8
[9] = Run-time group 9

p20030[0...3] BI: AND 0 inputs / AND 0 inputs
Access level: 3 Calculated: - Data type: U32 / Binary
Can be changed: T Scaling: - Data set: -
Units group: - Unit selection: -
Min: - Max: - Factory setting: 0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 0 of the AND function block.
Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **r20031** | **BO: AND 0 output Q / AND 0 output Q**  
Access level: 3  
Calculated: -  
Can be changed: -  
Scaling: -  
Units group: -  
Unit selection: -  
Min -  
Max -  
Factory setting -  
**Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 0 of the AND function block.** |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **p20032** | **AND 0 run-time group / AND 0 RTG**  
Access level: 3  
Calculated: -  
Can be changed: T  
Scaling: -  
Units group: -  
Unit selection: -  
Min 1  
Max 9999  
Factory setting 9999  
**Setting parameter for the run-time group in which the instance AND 0 of the AND function block is to be called.**  
Value:  
1: Run-time group 1  
2: Run-time group 2  
3: Run-time group 3  
4: Run-time group 4  
5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **p20033** | **AND 0 run sequence / AND 0 RunSeq**  
Access level: 3  
Calculated: -  
Can be changed: T  
Scaling: -  
Units group: -  
Unit selection: -  
Min 0  
Max 32000  
Factory setting 10  
**Setting parameter for the run sequence of instance AND 0 within the run-time group set in p20032.**  
Note:  
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **p20034[0...3]** | **BI: AND 1 inputs / AND 1 inputs**  
Access level: 3  
Calculated: -  
Can be changed: T  
Scaling: -  
Units group: -  
Unit selection: -  
Min -  
Max 0  
Factory setting -  
**Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 1 of the AND function block.**  
Index:  
[0] = Input I0  
[1] = Input I1  
[2] = Input I2  
[3] = Input I3 |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **r20035** | **BO: AND 1 output Q / AND 1 output Q**  
Access level: 3  
Calculated: -  
Can be changed: -  
Scaling: -  
Units group: -  
Unit selection: -  
Min -  
Max -  
Factory setting -  
**Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 1 of the AND function block.** |
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Units group</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20036 AND 1 run-time group / AND 1 RTG</td>
<td>Setting parameter for the run-time group in which the instance AND 1 of the AND function block is to be called.</td>
<td>1: Run-time group 1</td>
<td>-</td>
<td>9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: Run-time group 2</td>
<td>-</td>
<td>9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: Run-time group 3</td>
<td>-</td>
<td>9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4: Run-time group 4</td>
<td>-</td>
<td>9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5: Run-time group 5</td>
<td>-</td>
<td>9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6: Run-time group 6</td>
<td>-</td>
<td>9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9999: Do not calculate</td>
<td>-</td>
<td>9999</td>
</tr>
<tr>
<td>p20037 AND 1 run sequence / AND 1 RunSeq</td>
<td>Setting parameter for the run sequence of instance AND 1 within the run-time group set in p20036.</td>
<td>0: Run sequence 0</td>
<td>-</td>
<td>32000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: Run sequence 1</td>
<td>-</td>
<td>32000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: Run sequence 2</td>
<td>-</td>
<td>32000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: Run sequence 3</td>
<td>-</td>
<td>32000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4: Run sequence 4</td>
<td>-</td>
<td>32000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5: Run sequence 5</td>
<td>-</td>
<td>32000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6: Run sequence 6</td>
<td>-</td>
<td>32000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9999: Do not calculate</td>
<td>-</td>
<td>32000</td>
</tr>
<tr>
<td>p20038[0...3] BI: AND 2 inputs / AND 2 inputs</td>
<td>Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 2 of the AND function block.</td>
<td>[0] = Input I0</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] = Input I1</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[2] = Input I2</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[3] = Input I3</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>r20039 BO: AND 2 output Q / AND 2 output Q</td>
<td>Display parameter for binary quantity Q = I0 &amp; I1 &amp; I2 &amp; I3 of instance AND 2 of the AND function block.</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### p20040 AND 2 run-time group / AND 2 RTG

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9999</td>
<td>9999</td>
</tr>
</tbody>
</table>

**Description:** Setting parameter for the run-time group in which the instance AND 2 of the AND function block is to be called.

**Value:**
- 1: Run-time group 1
- 2: Run-time group 2
- 3: Run-time group 3
- 4: Run-time group 4
- 5: Run-time group 5
- 6: Run-time group 6
- 9999: Do not calculate

### p20041 AND 2 run sequence / AND 2 RunSeq

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>32000</td>
<td>30</td>
</tr>
</tbody>
</table>

**Description:** Setting parameter for the run sequence of instance AND 2 within the run-time group set in p20040.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

### p20042[0...3] BI: AND 3 inputs / AND 3 inputs

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -

**Index:**
- [0] = Input I0
- [1] = Input I1
- [2] = Input I2
- [3] = Input I3

**Description:** Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 3 of the AND function block.

### r20043 BO: AND 3 output Q / AND 3 output Q

- **Access level:** 3
- **Can be changed:** -
- **Units group:** -

**Description:** Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 3 of the AND function block.

### p20044 AND 3 run-time group / AND 3 RTG

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9999</td>
<td>9999</td>
</tr>
</tbody>
</table>

**Description:** Setting parameter for the run-time group in which the instance AND 3 of the AND function block is to be called.
### Parameters

#### Parameter list

**p20045**  
**AND 3 run sequence / AND 3 RunSeq**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
</tbody>
</table>

- **Min**: 0  
- **Max**: 32000  
- **Factory setting**: 40

**Description:** Setting parameter for the run sequence of instance AND 3 within the run-time group set in p20044.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

**Value:**

1. Run-time group 1  
2. Run-time group 2  
3. Run-time group 3  
4. Run-time group 4  
5. Run-time group 5  
6. Run-time group 6  
9999: Do not calculate

---

**p20046[0...3]**  
**BI: OR 0 inputs / OR 0 inputs**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
</tbody>
</table>

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

**Description:** Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 0 of the OR function block.

**Index:**

- [0] = Input I0  
- [1] = Input I1  
- [2] = Input I2  
- [3] = Input I3

---

**r20047**  
**BO: OR 0 output Q / OR 0 output Q**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
</tbody>
</table>

- **Min**: -  
- **Max**: -  
- **Factory setting**: -

**Description:** Display parameter for binary quantity Q = I0 | I1 | I2 | I3 of instance OR 0 of the OR function block.

---

**p20048**  
**OR 0 run-time group / OR 0 RTG**

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
</tbody>
</table>

- **Min**: 1  
- **Max**: 9999  
- **Factory setting**: 9999

**Description:** Setting parameter for the run-time group in which the instance OR 0 of the OR function block is to be called.

**Value:**

1. Run-time group 1  
2. Run-time group 2  
3. Run-time group 3  
4. Run-time group 4  
5. Run-time group 5  
6. Run-time group 6  
9999: Do not calculate
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20049</td>
<td>OR 0 run sequence / OR 0 RunSeq</td>
<td>3</td>
<td>-</td>
<td>Unsigned16</td>
<td>0-32000</td>
<td>0</td>
</tr>
<tr>
<td>p20050[0...3]</td>
<td>BI: OR 1 inputs / OR 1 inputs</td>
<td>3</td>
<td>-</td>
<td>U32 / Binary</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>r20051</td>
<td>BO: OR 1 output Q / OR 1 output Q</td>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>p20052</td>
<td>OR 1 run-time group / OR 1 RTG</td>
<td>3</td>
<td>-</td>
<td>Integer16</td>
<td>1-9999</td>
<td>9999</td>
</tr>
<tr>
<td>p20053</td>
<td>OR 1 run sequence / OR 1 RunSeq</td>
<td>3</td>
<td>-</td>
<td>Unsigned16</td>
<td>0-32000</td>
<td>70</td>
</tr>
</tbody>
</table>

**Description:**
- Setting parameter for the run sequence of instance OR 0 within the run-time group set in p20048.
- The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

**Note:**
- Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 1 of the OR function block.
- Index:
  - [0] = Input I0
  - [1] = Input I1
  - [2] = Input I2
  - [3] = Input I3

**Description:**
- Display parameter for binary quantity Q = I0 | I1 | I2 | I3 of instance OR 1 of the OR function block.

**Description:**
- Setting parameter for the run-time group in which the instance OR 1 of the OR function block is to be called.
- Value:
  1: Run-time group 1
  2: Run-time group 2
  3: Run-time group 3
  4: Run-time group 4
  5: Run-time group 5
  6: Run-time group 6
  9999: Do not calculate

**Description:**
- Setting parameter for the run sequence of instance OR 1 within the run-time group set in p20052.
## Parameters

### Parameter list

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Access level</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI: OR 2 inputs / OR 2 inputs</td>
<td>Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 2 of the OR function block.</td>
<td></td>
<td>3</td>
<td>[0] = Input I0</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[1] = Input I1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[2] = Input I2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[3] = Input I3</td>
<td>-</td>
</tr>
<tr>
<td>BO: OR 2 output Q / OR 2 output Q</td>
<td>Display parameter for binary quantity Q = I0</td>
<td></td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[1]</td>
<td>I1</td>
</tr>
<tr>
<td>OR 2 run-time group / OR 2 RTG</td>
<td>Setting parameter for the run-time group in which the instance OR 2 of the OR function block is to be called.</td>
<td></td>
<td>3</td>
<td>Run-time group 1</td>
<td>9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Run-time group 2</td>
<td>9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Run-time group 3</td>
<td>9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Run-time group 4</td>
<td>9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Run-time group 5</td>
<td>9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Run-time group 6</td>
<td>9999</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Do not calculate</td>
<td>-</td>
</tr>
<tr>
<td>OR 2 run sequence / OR 2 RunSeq</td>
<td>Setting parameter for the run sequence of instance OR 2 within the run-time group set in p20056.</td>
<td></td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Run sequence value</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.
**p20058[0...3]**  BI: OR 3 inputs / OR 3 inputs

Access level: 3  Calculated: -  Data type: U32 / Binary
Can be changed: T  Scaling: -  Data set: -
Units group: -  Unit selection: -

<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 of input quantities I0, I1, I2, I3 of instance OR 3 of the OR function block.

Index:
- [0] = Input I0
- [1] = Input I1
- [2] = Input I2
- [3] = Input I3

**r20059**  BO: OR 3 output Q / OR 3 output Q

Access level: 3  Calculated: -  Data type: Unsigned32
Can be changed: -  Scaling: -  Data set: -
Units group: -  Unit selection: -

<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: Display parameter for binary quantity Q = I0 | I1 | I2 | I3 of instance OR 3 of the OR function block.

**p20060**  OR 3 run-time group / OR 3 RTG

Access level: 3  Calculated: -  Data type: Integer16
Can be changed: T  Scaling: -  Data set: -
Units group: -  Unit selection: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9999</td>
<td></td>
</tr>
</tbody>
</table>

Description: Setting parameter for the run-time group in which the instance OR 3 of the OR function block is to be called.

Value:
1:  Run-time group 1
2:  Run-time group 2
3:  Run-time group 3
4:  Run-time group 4
5:  Run-time group 5
6:  Run-time group 6
9999: Do not calculate

**p20061**  OR 3 run sequence / OR 3 RunSeq

Access level: 3  Calculated: -  Data type: Unsigned16
Can be changed: T  Scaling: -  Data set: -
Units group: -  Unit selection: -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>32000</td>
<td>90</td>
</tr>
</tbody>
</table>

Description: Setting parameter for the run sequence of instance OR 3 within the run-time group set in p20060.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

**p20062[0...3]**  BI: XOR 0 inputs / XOR 0 inputs

Access level: 3  Calculated: -  Data type: U32 / Binary
Can be changed: T  Scaling: -  Data set: -
Units group: -  Unit selection: -

<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 of input quantities I0, I1, I2, I3 of instance XOR 0 of the XOR function block.
Parameters

Parameter list

Index:  
[0] = Input I0  
[1] = Input I1  
[2] = Input I2  
[3] = Input I3

**r20063**  
**BO: XOR 0 output Q / XOR 0 output Q**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display parameter for binary quantity Q of instance XOR 0 of the XOR function block.</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Scaling:</th>
<th>Data set:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**p20064**  
**XOR 0 run-time group / XOR 0 RTG**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting parameter for the run-time group in which the instance XOR 0 of the XOR function block is to be called.</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Integer16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Scaling:</th>
<th>Data set:</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9999</td>
<td></td>
</tr>
</tbody>
</table>

**p20065**  
**XOR 0 run sequence / XOR 0 RunSeq**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting parameter for the run sequence of instance XOR 0 within the run-time group set in p20064.</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Scaling:</th>
<th>Data set:</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>32000</td>
<td>110</td>
</tr>
</tbody>
</table>

**p20066[0...3]**  
**BI: XOR 1 inputs / XOR 1 inputs**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 1 of the XOR function block.</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access level:</th>
<th>Calculated:</th>
<th>Data type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>U32 / Binary</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Scaling:</th>
<th>Data set:</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>
**Parameter list**

### r20067  BO: XOR 1 output Q / XOR 1 output Q

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** -
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:**
- **Max:**
- **Factory setting:**

**Description:**
Display parameter for binary quantity Q of instance XOR 1 of the XOR function block.

### p20068  XOR 1 run-time group / XOR 1 RTG

- **Access level:** 3
- **Calculated:** -
- **Data type:** Integer16
- **Can be changed:** T
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** 1
- **Max:** 9999
- **Factory setting:** 9999

**Description:**
Setting parameter for the run-time group in which the instance XOR 1 of the XOR function block is to be called.

**Value:**
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

### p20069  XOR 1 run sequence / XOR 1 RunSeq

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned16
- **Can be changed:** T
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** 0
- **Max:** 32000
- **Factory setting:** 120

**Description:**
Setting parameter for the run sequence of instance XOR 1 within the run-time group set in p20068.

**Note:**
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

### p20070[0...3]  BI: XOR 2 inputs / XOR 2 inputs

- **Access level:** 3
- **Calculated:** -
- **Data type:** U32 / Binary
- **Can be changed:** T
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:**
- **Max:**
- **Factory setting:**

**Description:**
Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 2 of the XOR function block.

**Index:**
- [0] = Input I0
- [1] = Input I1
- [2] = Input I2
- [3] = Input I3

### r20071  BO: XOR 2 output Q / XOR 2 output Q

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** -
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:**
- **Max:**
- **Factory setting:**

**Description:**
Display parameter for binary quantity Q of instance XOR 2 of the XOR function block.
### Parameters

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Scaling</th>
<th>Data set</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20072</td>
<td><strong>XOR 2 run-time group / XOR 2 RTG</strong></td>
<td>Setting parameter for the run-time group in which the instance XOR 2 of the XOR function block is to be called.</td>
<td>3</td>
<td>-</td>
<td>Integer16</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>9999</td>
<td>9999</td>
</tr>
<tr>
<td>p20073</td>
<td><strong>XOR 2 run sequence / XOR 2 RunSeq</strong></td>
<td>Setting parameter for the run sequence of instance XOR 2 within the run-time group set in p20072.</td>
<td>3</td>
<td>-</td>
<td>Unsigned16</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>32000</td>
<td>130</td>
</tr>
<tr>
<td>p20074[0...3]</td>
<td><strong>BI: XOR 3 inputs / XOR 3 inputs</strong></td>
<td>Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 3 of the XOR function block.</td>
<td>3</td>
<td>-</td>
<td>U32 / Binary</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>r20075</td>
<td><strong>BO: XOR 3 output Q / XOR 3 output Q</strong></td>
<td>Display parameter for binary quantity Q of instance XOR 3 of the XOR function block.</td>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>p20076</td>
<td><strong>XOR 3 run-time group / XOR 3 RTG</strong></td>
<td>Setting parameter for the run-time group in which the instance XOR 3 of the XOR function block is to be called.</td>
<td>3</td>
<td>-</td>
<td>Integer16</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>9999</td>
<td>9999</td>
</tr>
</tbody>
</table>
Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

---

**p20077**  
XOR 3 run sequence / XOR 3 RunSeq

**Description:** Setting parameter for the run sequence of instance XOR 3 within the run-time group set in p20076.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

---

**p20078**  
BI: NOT 0 input I / NOT 0 input I

**Description:** Sets the signal source of input quantity I of instance NOT 0 of the inverter.

---

**r20079**  
BO: NOT 0 inverted output / NOT 0 inv output

**Description:** Display parameter for the inverted output of instance NOT 0 of the inverter.

---

**p20080**  
NOT 0 run-time group / NOT 0 RTG

**Description:** Setting parameter for the run-time group in which the instance NOT 0 of the inverter is to be called.

**Value:**
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate
### Parameters

**Parameter list**

#### p20081  NOT 0 run sequence / NOT 0 RunSeq

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned16
- **Can be changed:** T
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** 0
- **Max:** 32000
- **Factory setting:** 160

**Description:** Setting parameter for the run sequence of instance NOT 0 within the run-time group set in p20080.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

#### p20082  BI: NOT 1 input I / NOT 1 input I

- **Access level:** 3
- **Calculated:** -
- **Data type:** U32 / Binary
- **Can be changed:** T
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** 0

**Description:** Sets the signal source of input quantity I of instance NOT 1 of the inverter.

#### r20083  BO: NOT 1 inverted output / NOT 1 inv output

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** -
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** -

**Description:** Display parameter for the inverted output of instance NOT 1 of the inverter.

#### p20084  NOT 1 run-time group / NOT 1 RTG

- **Access level:** 3
- **Calculated:** -
- **Data type:** Integer16
- **Can be changed:** T
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** 1
- **Max:** 9999
- **Factory setting:** 9999

**Description:** Setting parameter for the run-time group in which the instance NOT 1 of the inverter is to be called.

**Value:**
- 1: Run-time group 1
- 2: Run-time group 2
- 3: Run-time group 3
- 4: Run-time group 4
- 5: Run-time group 5
- 6: Run-time group 6
- 9999: Do not calculate

#### p20085  NOT 1 run sequence / NOT 1 RunSeq

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned16
- **Can be changed:** T
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** 0
- **Max:** 32000
- **Factory setting:** 170

**Description:** Setting parameter for the run sequence of instance NOT 1 within the run-time group set in p20084.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.
### Parameter List

#### p20086 BI: NOT 2 input I / NOT 2 input I

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| Sets the signal source of input quantity I of instance NOT 2 of the inverter. | **Value:**

#### r20087 BO: NOT 2 inverted output / NOT 2 inv output

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| Display parameter for the inverted output of instance NOT 2 of the inverter. | **Value:**

#### p20088 NOT 2 run-time group / NOT 2 RTG

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| Setting parameter for the run-time group in which the instance NOT 2 of the inverter is to be called. | **Value:**

#### p20089 NOT 2 run sequence / NOT 2 RunSeq

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| Setting parameter for the run sequence of instance NOT 2 within the run-time group set in p20088. | **Value:**

#### p20090 BI: NOT 3 input I / NOT 3 input I

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| Sets the signal source of input quantity I of instance NOT 3 of the inverter. | **Value:**
Parameters
Parameter list

**r20091**

**BO: NOT 3 inverted output / NOT 3 inv output**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Display parameter for the inverted output of instance NOT 3 of the inverter.

**p20092**

**NOT 3 run-time group / NOT 3 RTG**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Setting parameter for the run-time group in which the instance NOT 3 of the inverter is to be called.

**Value:**
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

**p20093**

**NOT 3 run sequence / NOT 3 RunSeq**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Setting parameter for the run sequence of instance NOT 3 within the run-time group set in p20092.

**Note:**
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

**p20094[0...3]**

**CI: ADD 0 inputs / ADD 0 inputs**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: U32 / FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Scaling: PERCENT</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source of input quantities X0, X1, X2, X3 of instance ADD 0 of the adder.

**Index:**
[0] = Input X0
[1] = Input X1
[2] = Input X2
[3] = Input X3

**r20095**

**CO: ADD 0 output Y / ADD 0 output Y**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Scaling: PERCENT</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Display parameter for the output quantity \(Y = X0 + X1 + X2 + X3\) of instance ADD 0 of the adder.
### p20096

**ADD 0 run-time group / ADD 0 RTG**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Setting parameter for the run-time group in which the instance ADD 0 of the adder is to be called.</th>
</tr>
</thead>
</table>
| Value:       | 5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate |

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
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<tr>
<td>Can be changed:</td>
<td>T</td>
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<tr>
<td>Scaling:</td>
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</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>5</td>
</tr>
<tr>
<td>Max</td>
<td>9999</td>
</tr>
<tr>
<td>Factory setting</td>
<td>9999</td>
</tr>
</tbody>
</table>

### p20097

**ADD 0 run sequence / ADD 0 RunSeq**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Setting parameter for the run sequence of instance ADD 0 within the run-time group set in p20096.</th>
</tr>
</thead>
</table>
| Value:       | 0: Run-time group 0  
1: Run-time group 1  
2: Run-time group 2  
3: Run-time group 3  
210: Do not calculate |

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>-</td>
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<tr>
<td>Can be changed:</td>
<td>T</td>
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<tr>
<td>Scaling:</td>
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<tr>
<td>Units group:</td>
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<tr>
<td>Unit selection:</td>
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<tr>
<td>Min</td>
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<tr>
<td>Max</td>
<td>32000</td>
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<tr>
<td>Factory setting</td>
<td>210</td>
</tr>
</tbody>
</table>

### p20098[0...3]

**CI: ADD 1 inputs / ADD 1 inputs**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the signal source of input quantities X0, X1, X2, X3 of instance ADD 1 of the adder.</th>
</tr>
</thead>
</table>
| Index:       | [0] = Input X0  
[1] = Input X1  
[2] = Input X2  
[3] = Input X3 |

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>T</td>
</tr>
<tr>
<td>Scaling:</td>
<td>PERCENT</td>
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<td>Units group:</td>
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<td>Unit selection:</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>0</td>
</tr>
</tbody>
</table>

### r20099

**CO: ADD 1 output Y / ADD 1 output Y**

| Description: | Display parameter for the output quantity Y = X0 + X1 + X2 + X3 of instance ADD 1 of the adder. |

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>PERCENT</td>
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<tr>
<td>Units group:</td>
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<td>Unit selection:</td>
<td>-</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>

### p20100

**ADD 1 run-time group / ADD 1 RTG**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Setting parameter for the run-time group in which the instance ADD 1 of the adder is to be called.</th>
</tr>
</thead>
</table>
| Value:       | 5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate |

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
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<td>Can be changed:</td>
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<tr>
<td>Scaling:</td>
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<tr>
<td>Units group:</td>
<td>-</td>
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<tr>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>5</td>
</tr>
<tr>
<td>Max</td>
<td>9999</td>
</tr>
<tr>
<td>Factory setting</td>
<td>9999</td>
</tr>
</tbody>
</table>
### Parameters

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| **p20101**  | **ADD 1 run sequence / ADD 1 RunSeq**                                        |**Access level:** 3  
**Can be changed:** T  
**Units group:** -  
**Min:** 0  
**Max:** 32000  
**Factory setting:** 220 |
|             | **Setting parameter for the run sequence of instance ADD 1 within the run-time group set in p20100.** |**Note:**  
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value. |
|             | **Note:**  
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value. |
| **p20102[0...1]** | **CI: SUB 0 inputs / SUB 0 inputs**                                        |**Access level:** 3  
**Can be changed:** T  
**Units group:** -  
**Min:** -  
**Max:** -  
**Factory setting:** 0 |
|             | **Sets the signal source of minuend X1 and subtrahend X2 of instance SUB 0 of the subtractor.** |**Index:**  

[0] = Minuend X1  
[1] = Subtrahend X2 |
| **r20103**  | **CO: SUB 0 difference Y / SUB 0 difference Y**                              |**Access level:** 3  
**Can be changed:** T  
**Units group:** -  
**Min:** -  
**Max:** -  
**Factory setting:** - |
|             | **Display parameter for the difference Y = X1 - X2 of instance SUB 0 of the subtractor.** |**Description:**  
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value. |
| **p20104**  | **SUB 0 run-time group / SUB 0 RTG**                                        |**Access level:** 3  
**Can be changed:** T  
**Units group:** -  
**Min:** 5  
**Max:** 9999  
**Factory setting:** 9999 |
|             | **Setting parameter for the run-time group in which instance SUB 0 of the subtractor is to be called.** |**Value:**  

5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate |
| **p20105**  | **SUB 0 run sequence / SUB 0 RunSeq**                                       |**Access level:** 3  
**Can be changed:** T  
**Units group:** -  
**Min:** 0  
**Max:** 32000  
**Factory setting:** 240 |
|             | **Setting parameter for the run sequence of instance SUB 0 within the run-time group set in p20104.** |**Note:**  
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value. |
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Value</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p20106[0...1]</strong> CI: SUB 1 inputs / SUB 1 inputs</td>
<td>Sets the signal source of minuend X1 and subtrahend X2 of instance SUB 1 of the subtractor.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: U32 / FloatingPoint32</td>
<td>Can be changed: T</td>
<td>Scaling: PERCENT</td>
<td>Data set: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
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<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>0</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>r20107</strong> CO: SUB 1 difference Y / SUB 1 difference Y</td>
<td>Display parameter for the difference Y = X1 - X2 of instance SUB 1 of the subtractor.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: FloatingPoint32</td>
<td>Can be changed: -</td>
<td>Scaling: PERCENT</td>
<td>Data set: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p20108</strong> SUB 1 run-time group / SUB 1 RTG</td>
<td>Setting parameter for the run-time group in which instance SUB 1 of the subtractor is to be called.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Integer16</td>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
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</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>9999</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>p20109</strong> SUB 1 run sequence / SUB 1 RunSeq</td>
<td>Setting parameter for the run sequence of instance SUB 1 within the run-time group set in p20108.</td>
<td></td>
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<tr>
<td>Access level: 3</td>
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<td>Data type: Unsigned16</td>
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<td>Scaling: -</td>
<td>Data set: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
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</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<td>250</td>
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<td></td>
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</tr>
<tr>
<td><strong>p20110[0...3]</strong> CI: MUL 0 inputs / MUL 0 inputs</td>
<td>Sets the signal source of the factors X0, X1, X2, X3 of instance MUL 0 of the multiplier.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: U32 / FloatingPoint32</td>
<td>Can be changed: T</td>
<td>Scaling: PERCENT</td>
<td>Data set: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
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<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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</tbody>
</table>

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1-415
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
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<th>Can be changed</th>
<th>Scaling</th>
<th>Data type</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Can be changed</th>
<th>Scaling</th>
<th>Data type</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Can be changed</th>
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<th>Unit selection</th>
<th>Can be changed</th>
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<th>Data type</th>
<th>Data set</th>
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<tbody>
<tr>
<td>r20111</td>
<td><strong>CO: MUL 0 product Y / MUL 0 product Y</strong></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Description: Display parameter for the product ( Y = X_0 \times X_1 \times X_2 \times X_3 ) of instance MUL 0 of the multiplier.</td>
<td></td>
<td></td>
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<td>Scaling: PERCENT</td>
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<td>Unit selection: -</td>
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<td>Max -</td>
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<tr>
<td>p20112</td>
<td><strong>MUL 0 run-time group / MUL 0 RTG</strong></td>
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<tr>
<td></td>
<td>Description: Setting parameter for the run-time group in which instance MUL 0 of the multiplier is to be called.</td>
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<td></td>
<td>Value: 5: Run-time group 5 6: Run-time group 6 9999: Do not calculate</td>
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<tr>
<td>p20113</td>
<td><strong>MUL 0 run sequence / MUL 0 RunSeq</strong></td>
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<tr>
<td></td>
<td>Description: Setting parameter for the run sequence of instance MUL 0 within the run-time group set in p20112. Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.</td>
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<tr>
<td>p20114[0...3]</td>
<td><strong>CI: MUL 1 inputs / MUL 1 inputs</strong></td>
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<tr>
<td></td>
<td>Description: Sets the signal source of the factors ( X_0, X_1, X_2, X_3 ) of instance MUL 1 of the multiplier.</td>
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<tr>
<td></td>
<td>Index: ([0] = \text{Factor } X_0 ) ([1] = \text{Factor } X_1 ) ([2] = \text{Factor } X_2 ) ([3] = \text{Factor } X_3 )</td>
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<tr>
<td>r20115</td>
<td><strong>CO: MUL 1 product Y / MUL 1 product Y</strong></td>
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<tr>
<td></td>
<td>Description: Display parameter for the product ( Y = X_0 \times X_1 \times X_2 \times X_3 ) of instance MUL 1 of the multiplier.</td>
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<td></td>
<td>Access level: 3</td>
<td>Calculated: -</td>
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<td></td>
<td>Can be changed: -</td>
<td>Scaling: PERCENT</td>
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</tbody>
</table>
### Parameter List

**Parameters**

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20116</td>
<td><strong>MUL 1 run-time group / MUL 1 RTG</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Setting parameter for the run-time group in which instance MUL 1 of the multiplier is to be called.</td>
</tr>
<tr>
<td></td>
<td><strong>Value:</strong> 5: Run-time group 5, 6: Run-time group 6, 9999: Do not calculate</td>
</tr>
<tr>
<td>p20117</td>
<td><strong>MUL 1 run sequence / MUL 1 RunSeq</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Setting parameter for the run sequence of instance MUL 1 within the run-time group set in p20116. The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.</td>
</tr>
<tr>
<td>p20118[0...1]</td>
<td><strong>CI: DIV 0 inputs / DIV 0 inputs</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Sets the signal source of dividend X1 and divisor X2 of instance DIV 0 of the divider.</td>
</tr>
<tr>
<td></td>
<td><strong>Index:</strong> [0] = Dividend X0, [1] = Divisor X1</td>
</tr>
<tr>
<td>r20119[0...2]</td>
<td><strong>CO: DIV 0 quotient / DIV 0 quotient</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Display parameter for quotients Y = X1/X2, integer number quotients YIN, and division remainder MOD = (Y - YIN) x X2 of instance DIV 0 of the divider.</td>
</tr>
<tr>
<td></td>
<td><strong>Index:</strong> [0] = Quotient Y, [1] = Integer number quotient YIN, [2] = Div remainder MOD</td>
</tr>
<tr>
<td>r20120</td>
<td><strong>BO: DIV 0 divisor is zero QF / DIV 0 divisor=0 QF</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Display parameter for the signal QF that the divisor X2 of instance DIV 0 of the divider is zero. X2 = 0.0 =&gt; QF = 1</td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

**p20121**  
**DIV 0 run-time group / DIV 0 RTG**  
**Access level:** 3  
**Calculated:** -  
**Data type:** Integer16  
**Can be changed:** T  
**Scaling:** -  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  
**Min:** 5  
**Max:** 9999  
**Factory setting:** 9999

**Description:** Setting parameter for the run-time group in which instance DIV 0 of the divider is to be called.  
**Value:**  
5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate

**p20122**  
**DIV 0 run sequence / DIV 0 RunSeq**  
**Access level:** 3  
**Calculated:** -  
**Data type:** Unsigned16  
**Can be changed:** T  
**Scaling:** -  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  
**Min:** 0  
**Max:** 32000  
**Factory setting:** 300

**Description:** Setting parameter for the run sequence of instance DIV 0 within the run-time group set in p20121.  
**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

**p20123[0...1]**  
**CI: DIV 1 inputs / DIV 1 inputs**  
**Access level:** 3  
**Calculated:** -  
**Data type:** U32 / FloatingPoint32  
**Can be changed:** T  
**Scaling:** PERCENT  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  
**Min:** -  
**Max:** -  
**Factory setting:** 0

**Description:** Sets the signal source of dividend X1 and divisor X2 of instance DIV 1 of the divider.  
**Index:**  
[0] = Dividend X0  
[1] = Divisor X1

**r20124[0...2]**  
**CO: DIV 1 quotient / DIV 1 quotient**  
**Access level:** 3  
**Calculated:** -  
**Data type:** FloatingPoint32  
**Can be changed:** -  
**Scaling:** PERCENT  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  
**Min:** -  
**Max:** -  
**Factory setting:** -

**Description:** Display parameter for quotients \( Y = X1/X2 \), integer number quotients YIN, and division remainder \( MOD = (Y - YIN) \times X2 \) of instance DIV 1 of the divider.  
**Index:**  
[0] = Quotient Y  
[1] = Integer number quotient YIN  
[2] = Div remainder MOD

**r20125**  
**BO: DIV 1 divisor is zero QF / DIV 1 divisor=0 QF**  
**Access level:** 3  
**Calculated:** -  
**Data type:** Unsigned32  
**Can be changed:** -  
**Scaling:** -  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  
**Min:** -  
**Max:** -  
**Factory setting:** -

**Description:** Display parameter for the signal QF that the divisor X2 of instance DIV 1 of the divider is zero.  
\( X2 = 0.0 \Rightarrow QF = 1 \)
### p20126  DIV 1 run-time group / DIV 1 RTG

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>Setting parameter for the run-time group in which instance DIV 1 of the divider is to be called.</td>
<td>5: Run-time group 5, 6: Run-time group 6, 9999: Do not calculate</td>
</tr>
<tr>
<td>Can be changed</td>
<td>5 9999</td>
<td></td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>Integer16</td>
<td></td>
</tr>
<tr>
<td>Data set</td>
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<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

### p20127  DIV 1 run sequence / DIV 1 RunSeq

<table>
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<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>Setting parameter for the run sequence of instance DIV 1 within the run-time group set in p20126.</td>
<td>5 9999</td>
</tr>
<tr>
<td>Can be changed</td>
<td>5 9999</td>
<td></td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned16</td>
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<td>Data set</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
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</tr>
</tbody>
</table>

### p20128  CI: AVA 0 input X / AVA 0 input X

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>Sets the signal source of the input quantity X of instance AVA 0 of the absolute value generator with sign evaluation.</td>
<td>5 9999</td>
</tr>
<tr>
<td>Can be changed</td>
<td>5 9999</td>
<td></td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>U32 / FloatingPoint32</td>
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</tr>
<tr>
<td>Data set</td>
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<td></td>
</tr>
<tr>
<td>Units group</td>
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<td></td>
</tr>
<tr>
<td>Scaling</td>
<td>PERCENT</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
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</tr>
</tbody>
</table>

### r20129  CO: AVA 0 output Y / AVA 0 output Y

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>Display parameter for output quantity Y of instance AVA 0 of the absolute value generator with sign evaluation.</td>
<td>5 9999</td>
</tr>
<tr>
<td>Can be changed</td>
<td>5 9999</td>
<td></td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>Data set</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Scaling</td>
<td>PERCENT</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

### r20130  BO: AVA 0 input negative SN / AVA 0 input neg SN

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>Display parameter for signal SN that the input quantity X of instance AVA 0 of the absolute value generator with sign evaluation is negative.</td>
<td>5 9999</td>
</tr>
<tr>
<td>Can be changed</td>
<td>5 9999</td>
<td></td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32</td>
<td></td>
</tr>
<tr>
<td>Data set</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.
- X < 0.0 => SN = 1
### Parameters

#### Parameter list

**p20131 AVA 0 run-time group / AVA 0 RTG**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>5</td>
<td>9999</td>
<td>9999</td>
</tr>
</tbody>
</table>

**Description:** Setting parameter for the run-time group in which instance AVA 0 of the absolute value generator with sign evaluation is to be called.

**Value:**
- 5: Run-time group 5
- 6: Run-time group 6
- 9999: Do not calculate

**p20132 AVA 0 run sequence / AVA 0 RunSeq**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>32000</td>
<td>340</td>
</tr>
</tbody>
</table>

**Description:** Setting parameter for the run sequence of instance AVA 0 within the run-time group set in p20131.

**Note:**
- The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

**p20133 CI: AVA 1 input X / AVA 1 input X**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: U32 / FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Scaling: PERCENT</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source of the input quantity X of instance AVA 1 of the absolute value generator with sign evaluation.

**r20134 CO: AVA 1 output Y / AVA 1 output Y**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: PERCENT</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</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>

**Description:** Display parameter for output quantity Y of instance AVA 1 of the absolute value generator with sign evaluation.

**r20135 BO: AVA 1 input negative SN / AVA 1 input neg SN**

<table>
<thead>
<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</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>

**Description:**
- Display parameter for signal SN that the input quantity X of instance AVA 1 of the absolute value generator with sign evaluation is negative.
- \( X < 0.0 \Rightarrow SN = 1 \)
### p20136 AVA 1 run-time group / AVA 1 RTG

**Description:** Setting parameter for the run-time group in which instance AVA 1 of the absolute value generator with sign evaluation is to be called.

**Value:**
- 5: Run-time group 5
- 6: Run-time group 6
- 9999: Do not calculate

### p20137 AVA 1 run sequence / AVA 1 RunSeq

**Description:** Setting parameter for the run sequence of instance AVA 1 within the run-time group set in p20136.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

### p20138 BI: MFP 0 input pulse I / MFP 0 inp_pulse I

**Description:** Sets the signal source for the input pulse I of instance MFP 0 of the pulse generator.

### p20139 MFP 0 pulse duration in ms / MFP 0 pulse_dur ms

**Description:** Setting parameter for pulse duration T in milliseconds of instance MFP 0 of the pulse generator.

### r20140 BO: MFP 0 output Q / MFP 0 output Q

**Description:** Display parameter for output pulse Q of instance MFP 0 of the pulse generator.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p20141</strong></td>
<td>MFP 0 run-time group / MFP 0 RTG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Integer16</td>
<td></td>
</tr>
<tr>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min 5</td>
<td>Max 9999</td>
<td>Factory setting 9999</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong> Setting parameter for the run-time group in which the instance MFP 0 of the pulse generator is to be called.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Value:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5: Run-time group 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6: Run-time group 6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9999: Do not calculate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **p20142** | MFP 0 run sequence / MFP 0 RunSeq | | |
| Access level: 3 | Calculated: - | Data type: Unsigned16 | |
| Can be changed: T | Scaling: - | Data set: - | |
| Units group: - | Unit selection: - | | |
| Min 0 | Max 32000 | Factory setting 370 | | |
| **Description:** Setting parameter for the run sequence of instance MFP 0 within the run-time group set in p20141. | | | |
| **Note:** | | | |
| The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value. | | | |

| **p20143** | BI: MFP 1 input pulse I / MFP 1 inp_pulse I | | |
| Access level: 3 | Calculated: - | Data type: U32 / Binary | |
| Can be changed: T | Scaling: - | Data set: - | |
| Units group: - | Unit selection: - | | |
| Min - | Max - | Factory setting 0 | | |
| **Description:** Sets the signal source for the input pulse I of instance MFP 1 of the pulse generator. | | | |

| **p20144** | MFP 1 pulse duration in ms / MFP 1 pulse_dur ms | | |
| Access level: 3 | Calculated: - | Data type: FloatingPoint32 | |
| Can be changed: T | Scaling: - | Data set: - | |
| Units group: - | Unit selection: - | | |
| Min 0.00 | Max 5400000.00 | Factory setting 0.00 | | |
| **Description:** Setting parameter for pulse duration T in milliseconds of instance MFP 1 of the pulse generator. | | | |

| **r20145** | BO: MFP 1 output Q / MFP 1 output Q | | |
| Access level: 3 | Calculated: - | Data type: Unsigned32 | |
| Can be changed: - | Scaling: - | Data set: - | |
| Units group: - | Unit selection: - | | |
| Min - | Max - | Factory setting - | | |
| **Description:** Display parameter for output pulse Q of instance MFP 1 of the pulse generator. | | | |
### p20146 MFP 1 run-time group / MFP 1 RTG

| Access level: | 3 | Calculated: | - | Data type: Integer16 |
| Can be changed: | T | Scaling: | - | Data set: - |
| Units group: | - | Unit selection: | - |

**Min**: 5  
**Max**: 9999  
**Factory setting**: 9999

**Description**: Setting parameter for the run-time group in which the instance MFP 1 of the pulse generator is to be called.

**Value**:
- 5: Run-time group 5  
- 6: Run-time group 6  
- 9999: Do not calculate

### p20147 MFP 1 run sequence / MFP 1 RunSeq

| Access level: | 3 | Calculated: | - | Data type: Unsigned16 |
| Can be changed: | T | Scaling: | - | Data set: - |
| Units group: | - | Unit selection: | - |

**Min**: 0  
**Max**: 32000  
**Factory setting**: 380

**Description**: Setting parameter for the run sequence of instance MFP 1 within the run-time group set in p20146.

**Note**: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

### p20148 BI: PCL 0 input pulse I / PCL 0 inp_pulse I

| Access level: | 3 | Calculated: | - | Data type: U32 / Binary |
| Can be changed: | T | Scaling: | - | Data set: - |
| Units group: | - | Unit selection: | - |

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

**Description**: Sets the signal source for the input pulse I of instance PCL 0 of the pulse shortener.

### p20149 PCL 0 pulse duration in ms / PCL 0 pulse_dur ms

| Access level: | 3 | Calculated: | - | Data type: FloatingPoint32 |
| Can be changed: | T | Scaling: | - | Data set: - |
| Units group: | - | Unit selection: | - |

**Min**: 0.00  
**Max**: 5400000.00  
**Factory setting**: 0.00

**Description**: Setting parameter for pulse duration T in milliseconds of instance PCL 0 of the pulse shortener.

### r20150 BO: PCL 0 output Q / PCL 0 output Q

| Access level: | 3 | Calculated: | - | Data type: Unsigned32 |
| Can be changed: | - | Scaling: | - | Data set: - |
| Units group: | - | Unit selection: | - |

**Min**: -  
**Max**: -  
**Factory setting**: -

**Description**: Display parameter for output pulse Q of instance PCL 0 of the pulse shortener.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20151</td>
<td>Setting parameter for the run-time group in which the instance PCL 0 of the pulse shortener is to be called.</td>
<td>5: Run-time group 5 6: Run-time group 6 9999: Do not calculate</td>
</tr>
<tr>
<td>p20152</td>
<td>Setting parameter for the run sequence of instance PCL 0 within the run-time group set in p20151.</td>
<td></td>
</tr>
<tr>
<td>p20153</td>
<td>Sets the signal source for the input pulse I of instance PCL 1 of the pulse shortener.</td>
<td></td>
</tr>
<tr>
<td>p20154</td>
<td>Setting parameter for pulse duration T in milliseconds of instance PCL 1 of the pulse shortener.</td>
<td></td>
</tr>
<tr>
<td>r20155</td>
<td>Display parameter for output pulse Q of instance PCL 1 of the pulse shortener.</td>
<td></td>
</tr>
</tbody>
</table>
### p20156  PCL 1 run-time group / PCL 1 RTG

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
</table>
| p20156    | Setting parameter for the run-time group in which the instance PCL 1 of the pulse shortener is to be called. | 5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate | |

#### Description:
Setting parameter for the run-time group in which the instance PCL 1 of the pulse shortener is to be called.

#### Value:
5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate

#### Note:
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

### p20157  PCL 1 run sequence / PCL 1 RunSeq

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
</table>
| p20157    | Setting parameter for the run sequence of instance PCL 1 within the run-time group set in p20156. | 0  
32000  
410 | |

#### Description:
Setting parameter for the run sequence of instance PCL 1 within the run-time group set in p20156.

#### Note:
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

### p20158  BI: PDE 0 input pulse I / PDE 0 inp_pulse I

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
</table>
| p20158    | Sets the signal source for the input pulse I of instance PDE 0 of the closing delay device. | -  
-  
0 | |

### p20159  PDE 0 pulse delay time in ms / PDE 0 t_del ms

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
</table>
| p20159    | Setting parameter for pulse delay time T in milliseconds of instance PDE 0 of the closing delay device. | 0.00  
5400000.00  
0.00 | |

### r20160  BO: PDE 0 output Q / PDE 0 output Q

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
</table>
| r20160    | Display parameter for output pulse Q of instance PDE 0 of the closing delay device. | -  
-  
- | |

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### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20161</td>
<td>Setting parameter for the run-time group in which instance PDE 0 of the closing delay device is to be called.</td>
<td>5: Run-time group 5, 6: Run-time group 6, 9999: Do not calculate</td>
<td></td>
</tr>
<tr>
<td>p20162</td>
<td>Setting parameter for the run sequence of instance PDE 0 within the run-time group set in p20161.</td>
<td>0: Run sequence 0, 32000: Run sequence 32000, 430: Run sequence 430</td>
<td>The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.</td>
</tr>
<tr>
<td>p20163</td>
<td>Sets the signal source for the input pulse I of instance PDE 1 of the closing delay device.</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>p20164</td>
<td>Setting parameter for pulse delay time T in milliseconds of instance PDE 1 of the closing delay device.</td>
<td>0.00: Pulse delay time 0.00, 540000.00: Pulse delay time 540000.00, 0.00: Pulse delay time 0.00</td>
<td></td>
</tr>
<tr>
<td>r20165</td>
<td>Display parameter for output pulse Q of instance PDE 1 of the closing delay device.</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Value</td>
<td>Note</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------------------------------------------------</td>
<td>----------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>p20166</td>
<td>Setting parameter for the run-time group in which instance PDE 1 of the closing delay device is to be called.</td>
<td>5: Run-time group 5</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6: Run-time group 6</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9999: Do not calculate</td>
<td></td>
</tr>
<tr>
<td>p20167</td>
<td>Setting parameter for the run sequence of instance PDE 1 within the run-time group set in p20166.</td>
<td>0 32000 440</td>
<td>- The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.</td>
</tr>
<tr>
<td>p20168</td>
<td>Sets the signal source for the input pulse I of instance PDF 0 of the breaking delay device.</td>
<td>- - 0</td>
<td>-</td>
</tr>
<tr>
<td>p20169</td>
<td>Setting parameter for pulse extension time T in milliseconds of instance PDF 0 of the breaking delay device.</td>
<td>0.00 540000.00 0.00</td>
<td>-</td>
</tr>
<tr>
<td>r20170</td>
<td>Display parameter for output pulse Q of instance PDF 0 of the breaking delay device.</td>
<td>- - -</td>
<td>-</td>
</tr>
</tbody>
</table>
### Parameters

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20171 PDF 0 run-time group / PDF 0 RTG</td>
<td>Setting parameter for the run-time group in which the instance PDF 0 of the breaking delay device is to be called.</td>
<td>5, 6, 9999</td>
<td>Run-time group 5, 6, Do not calculate</td>
</tr>
<tr>
<td>p20172 PDF 0 run sequence / PDF 0 RunSeq</td>
<td>Setting parameter for the run sequence of instance PDF 0 within the run-time group set in p20171.</td>
<td>0, 32000</td>
<td>The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.</td>
</tr>
<tr>
<td>p20173 BI: PDF 1 input pulse I / PDF 1 inp_pulse I</td>
<td>Sets the signal source for the input pulse I of instance PDF 1 of the breaking delay device.</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>p20174 PDF 1 pulse extension time in ms / PDF 1 t_ext ms</td>
<td>Setting parameter for pulse extension time T in milliseconds of instance PDF 1 of the breaking delay device.</td>
<td>0.00 - 5400.00</td>
<td></td>
</tr>
<tr>
<td>r20175 BO: PDF 1 output Q / PDF 1 output Q</td>
<td>Display parameter for output pulse Q of instance PDF 1 of the breaking delay device.</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20176</td>
<td>PDF 1 run-time group / PDF 1 RTG</td>
<td>Setting parameter for the run-time group in which the instance PDF 1 of the breaking delay device is to be called.</td>
<td>5: Run-time group 5, 6: Run-time group 6, 9999: Do not calculate</td>
<td>3</td>
<td>Integer16</td>
</tr>
<tr>
<td>p20177</td>
<td>PDF 1 run sequence / PDF 1 RunSeq</td>
<td>Setting parameter for the run sequence of instance PDF 1 within the run-time group set in p20176.</td>
<td>0: Run sequence 0, 32000: Run sequence 32000, 470: Run sequence 470</td>
<td>3</td>
<td>Unsigned16</td>
</tr>
<tr>
<td>p20178[0...1]</td>
<td>BI: PST 0 inputs / PST 0 inputs</td>
<td>Sets the signal source for input pulse I and the reset input R of instance PST 0 of the pulse extension element.</td>
<td>[0] = Input pulse I, [1] = Reset input R</td>
<td>3</td>
<td>U32 / Binary</td>
</tr>
<tr>
<td>p20179</td>
<td>PST 0 pulse duration in ms / PST 0 pulse_dur ms</td>
<td>Setting parameter for pulse duration in milliseconds of instance PST 0 of the pulse extension element.</td>
<td>0.00: Pulse duration 0.00 ms, 5400000.00: Pulse duration 5400000.00 ms</td>
<td>3</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>r20180</td>
<td>BO: PST 0 output Q / PST 0 output Q</td>
<td>Display parameter for output pulse Q of instance PST 0 of the pulse extension element.</td>
<td></td>
<td>3</td>
<td>Unsigned32</td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

**p20181 PST 0 run-time group / PST 0 RTG**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| Setting parameter for the run-time group in which the instance PST 0 of the pulse extension element is to be called. | 5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate |

**p20182 PST 0 run sequence / PST 0 RunSeq**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| Setting parameter for the run sequence of instance PST 0 within the run-time group set in p20181. | 0  
7999  
490 |

**p20183[0...1] BI: PST 1 inputs / PST 1 inputs**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| Sets the signal source for input pulse I and the reset input R of instance PST 1 of the pulse extension element. | [0] = Input pulse I  
[1] = Reset input R |

**p20184 PST 1 pulse duration in ms / PST 1 pulse_dur ms**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| Setting parameter for pulse duration T in milliseconds of instance PST 1 of the pulse extension element. | 0.00  
5400000.00  
0.00 |

**r20185 BO: PST 1 output Q / PST 1 output Q**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| Display parameter for output pulse Q of instance PST 1 of the pulse extension element. | -  
-  
- |
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20186 PST 1 run-time group / PST 1 RTG</td>
<td>Setting parameter for the run-time group in which the instance PST 1 of the pulse extension element is to be called.</td>
<td>5: Run-time group 5  6: Run-time group 6  9999: Do not calculate</td>
</tr>
<tr>
<td>p20187 PST 1 run sequence / PST 1 RunSeq</td>
<td>Setting parameter for the run sequence of instance PST 1 within the run-time group set in p20186. Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.</td>
<td>0  7999  500</td>
</tr>
<tr>
<td>p20188[0...1] BI: RSR 0 inputs / RSR 0 inputs</td>
<td>Sets the signal source for set input S and reset input R of instance RSR 0 of the RS flipflop. Index: [0] = Set S [1] = Reset R</td>
<td>- - -</td>
</tr>
<tr>
<td>r20189 BO: RSR 0 output Q / RSR 0 output Q</td>
<td>Display parameter for output Q of instance RSR 0 of the RS flipflop</td>
<td>- - -</td>
</tr>
<tr>
<td>r20190 BO: RSR 0 inverted output QN / RSR 0 inv outp QN</td>
<td>Display parameter for inverted output QN of instance RSR 0 of the RS flipflop.</td>
<td>- - -</td>
</tr>
</tbody>
</table>
### Parameters
#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Access Level</th>
<th>Can be changed</th>
<th>Units group</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20191 RSR 0 run-time group / RSR 0 RTG</td>
<td>Setting parameter for the run-time group in which instance RSR 0 of the RS flipflop is to be called.</td>
<td>1: Run-time group 1&lt;br&gt;2: Run-time group 2&lt;br&gt;3: Run-time group 3&lt;br&gt;4: Run-time group 4&lt;br&gt;5: Run-time group 5&lt;br&gt;6: Run-time group 6&lt;br&gt;9999: Do not calculate</td>
<td>3</td>
<td>T</td>
<td>-</td>
<td>1</td>
<td>9999</td>
<td>9999</td>
</tr>
<tr>
<td>p20192 RSR 0 run sequence / RSR 0 RunSeq</td>
<td>Setting parameter for the run sequence of instance RSR 0 within the run-time group set in p20191.</td>
<td>0-7999</td>
<td>3</td>
<td>T</td>
<td>-</td>
<td>0</td>
<td>7999</td>
<td>520</td>
</tr>
<tr>
<td>p20193[0...1] BI: RSR 1 inputs / RSR 1 inputs</td>
<td>Sets the signal source for set input S and reset input R of instance RSR 1 of the RS flipflop.</td>
<td>[0] = Set S&lt;br&gt;[1] = Reset R</td>
<td>3</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>r20194 BO: RSR 1 output Q / RSR 1 output Q</td>
<td>Display parameter for output Q of instance RSR 1 of the RS flipflop</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r20195 BO: RSR 1 inverted output QN / RSR 1 inv outp QN</td>
<td>Display parameter for inverted output QN of instance RSR 1 of the RS flipflop.</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### p20196 RSR 1 run-time group / RSR 1 RTG

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>
| Setting parameter for the run-time group in which instance RSR 1 of the RS flipflop is to be called. | 1: Run-time group 1  
2: Run-time group 2  
3: Run-time group 3  
4: Run-time group 4  
5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate |

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
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<tbody>
<tr>
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<td>Integer16</td>
</tr>
</tbody>
</table>

<table>
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<th>Data set</th>
</tr>
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<tbody>
<tr>
<td>T</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

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

### p20197 RSR 1 run sequence / RSR 1 RunSeq

<table>
<thead>
<tr>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting parameter for the run sequence of instance RSR 1 within the run-time group set in p20196.</td>
<td>The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.</td>
</tr>
</tbody>
</table>

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>T</td>
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<td>-</td>
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</tbody>
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<table>
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<th>Unit selection</th>
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</thead>
<tbody>
<tr>
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<td>-</td>
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<table>
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</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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</tbody>
</table>

### p20198[0...3] BI: DFR 0 inputs / DFR 0 inputs

<table>
<thead>
<tr>
<th>Description</th>
<th>Index</th>
</tr>
</thead>
</table>
| Sets the signal source for trigger input I, D input D, set input S, and reset input R of instance DFR 0 of the D flipflop. | [0] = Trigger input I  
[1] = D input D  
[2] = Set S  
[3] = Reset R |

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<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
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<tr>
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<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-</td>
</tr>
</tbody>
</table>

<table>
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<th>Max</th>
<th>Factory setting</th>
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</thead>
<tbody>
<tr>
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<td>-</td>
</tr>
</tbody>
</table>

### r20199 BO: DFR 0 output Q / DFR 0 output Q

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td>Display parameter for output Q of instance DFR 0 of the D flipflop.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
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<th>Max</th>
<th>Factory setting</th>
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</thead>
<tbody>
<tr>
<td>-</td>
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</tr>
</tbody>
</table>

### r20200 BO: DFR 0 inverted output QN / DFR 0 inv outp QN

<table>
<thead>
<tr>
<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Display parameter for the inverted output QN of instance DFR 0 of the D flipflop.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
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<td>-</td>
<td>Unsigned32</td>
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</tbody>
</table>

<table>
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<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### p20201  DFR 0 run-time group / DFR 0 RTG

| Access level: 3 | Calculated: - | Data type: Integer16 |
| Can be changed: T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |

**Min** 1  
**Max** 9999  
**Factory setting** 9999  

**Description:** Setting parameter for the run-time group in which instance DFR 0 of the D flipflop is to be called.  
**Value:**  
1: Run-time group 1  
2: Run-time group 2  
3: Run-time group 3  
4: Run-time group 4  
5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate

### p20202  DFR 0 run sequence / DFR 0 RunSeq

| Access level: 3 | Calculated: - | Data type: Unsigned16 |
| Can be changed: T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |

**Min** 0  
**Max** 32000  
**Factory setting** 550  

**Description:** Setting parameter for the run sequence of instance DFR 0 within the run-time group set in p20201.  
**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

### p20203[0...3]  BI: DFR 1 inputs / DFR 1 inputs

| Access level: 3 | Calculated: - | Data type: U32 / Binary |
| Can be changed: T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |

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

**Index:**  
[0] = Trigger input I  
[1] = D input D  
[2] = Set S  
[3] = Reset R  

**Description:** Sets the signal source for trigger input I, D input D, set input S, and reset input R of instance DFR 1 of the D flipflop.

### r20204  BO: DFR 1 output Q / DFR 1 output Q

| Access level: 3 | Calculated: - | Data type: Unsigned32 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |

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

**Description:** Display parameter for output Q of instance DFR 1 of the D flipflop.

### r20205  BO: DFR 1 inverted output QN / DFR 1 inv outp QN

| Access level: 3 | Calculated: - | Data type: Unsigned32 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - |

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

**Description:** Display parameter for the inverted output QN of instance DFR 1 of the D flipflop.
Parameter list

**p20206**

**DFR 1 run-time group / DFR 1 RTG**

<table>
<thead>
<tr>
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<th>Calculated: -</th>
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</thead>
<tbody>
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<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9999</td>
<td>9999</td>
</tr>
</tbody>
</table>

**Description:** Setting parameter for the run-time group in which instance DFR 1 of the D flipflop is to be called.

**Value:**
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

**p20207**

**DFR 1 run sequence / DFR 1 RunSeq**

<table>
<thead>
<tr>
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<th>Calculated: -</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>32000</td>
<td>560</td>
</tr>
</tbody>
</table>

**Description:** Setting parameter for the run-time group of instance DFR 1 within the run-time group set in p20206.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

**p20208[0...1]**

**BI: BSW 0 inputs / BSW 0 inputs**

<table>
<thead>
<tr>
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<th>Data type: U32 / Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
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<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source of input quantities I0 and I1 of instance BSW 0 of the binary changeover switch.

**Index:**
[0] = Input I0
[1] = Input I1

**p20209**

**BI: BSW 0 switch setting I / BSW 0 sw_setting**

<table>
<thead>
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</thead>
<tbody>
<tr>
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<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source of the switch setting I of instance BSW 0 of the binary changeover switch.

**r20210**

**BO: BSW 0 output Q / BSW 0 output Q**

<table>
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<tr>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></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:** Display parameter for output quantity Q of instance BSW 0 of the binary changeover switch.
Parameters

Parameter list

**p20211**  
**BSW 0 run-time group / BSW 0 RTG**

Access level: 3  
Can be changed: T  
Units group: -  

<table>
<thead>
<tr>
<th>1</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>9999</td>
<td>9999</td>
<td></td>
</tr>
</tbody>
</table>

Description: Setting parameter for the run-time group in which the instance BSW 0 of the binary changeover switch is to be called.

**Value:**
1: Run-time group 1  
2: Run-time group 2  
3: Run-time group 3  
4: Run-time group 4  
5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate

**p20212**  
**BSW 0 run sequence / BSW 0 RunSeq**

Access level: 3  
Can be changed: T  
Units group: -  

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<th>0</th>
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<th>Factory setting</th>
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<tr>
<td>7999</td>
<td>580</td>
<td></td>
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</tbody>
</table>

Description: Setting parameter for the run sequence of instance BSW 0 within the run-time group set in p20211.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

**p20213[0...1]**  
**BI: BSW 1 inputs / BSW 1 inputs**

Access level: 3  
Can be changed: T  
Units group: -  

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<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the signal source of input quantities I0 and I1 of instance BSW 1 of the binary changeover switch.

**Index:**
[0] = Input I0  
[1] = Input I1

**p20214**  
**BI: BSW 1 switch setting I / BSW 1 sw_setting**

Access level: 3  
Can be changed: T  
Units group: -  

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<th>Max</th>
<th>Factory setting</th>
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</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

Description: Sets the signal source of the switch setting I of instance BSW 1 of the binary changeover switch.

**r20215**  
**BO: BSW 1 output Q / BSW 1 output Q**

Access level: 3  
Can be changed: -  
Units group: -  

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<th>Max</th>
<th>Factory setting</th>
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</thead>
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</table>

Description: Display parameter for output quantity Q of instance BSW 1 of the binary changeover switch.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20216</td>
<td>BSW 1 run-time group / BSW 1 RTG</td>
<td>Setting parameter for the run-time group in which the instance BSW 1 of the binary changeover switch is to be called.</td>
<td>1: Run-time group 1</td>
<td>2: Run-time group 2</td>
<td>3: Run-time group 3</td>
</tr>
<tr>
<td>p20217</td>
<td>BSW 1 run sequence / BSW 1 RunSeq</td>
<td>Setting parameter for the run sequence of instance BSW 1 within the run-time group set in p20216.</td>
<td>0</td>
<td>7999</td>
<td>590</td>
</tr>
<tr>
<td>p20218[0...1] CI: NSW 0 inputs / NSW 0 inputs</td>
<td>Sets the signal source of input quantities X0 and X1 of instance NSW 0 of the numeric changeover switch.</td>
<td>[0] = Input X0</td>
<td>[1] = Input X1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p20219 BI: NSW 0 switch setting I / NSW 0 sw_setting</td>
<td>Sets the signal source of the switch setting I of instance NSW 0 of the numeric changeover switch.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r20220 CO: NSW 0 output Y / NSW 0 output Y</td>
<td>Display parameter for output quantity Y of instance NSW 0 of the numeric changeover switch.</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
### p20221 NSW 0 run-time group / NSW 0 RTG

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</thead>
<tbody>
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<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>9999</td>
<td>9999</td>
</tr>
</tbody>
</table>

**Description:** Setting parameter for the run-time group in which the instance NSW 0 of the numeric changeover switch is to be called.

**Value:**
- 5: Run-time group 5
- 6: Run-time group 6
- 9999: Do not calculate

### p20222 NSW 0 run sequence / NSW 0 RunSeq

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type: Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>32000</td>
<td>610</td>
</tr>
</tbody>
</table>

**Description:** Setting parameter for the run sequence of instance NSW 0 within the run-time group set in p20221.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

### p20223[0...1] CI: NSW 1 inputs / NSW 1 inputs

<table>
<thead>
<tr>
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<th>Calculated:</th>
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<th>Data type: U32 / FloatingPoint32</th>
</tr>
</thead>
<tbody>
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<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>PERCENT</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source of input quantities X0 and X1 of instance NSW 1 of the numeric changeover switch.

**Index:**
- [0] = Input X0
- [1] = Input X1

### p20224 BI: NSW 1 switch setting I / NSW 1 sw_setting

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
<th>-</th>
<th>Data type: U32 / Binary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Scaling:</td>
<td>-</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source of the switch setting I of instance NSW 1 of the numeric changeover switch.

### r20225 CO: NSW 1 output Y / NSW 1 output Y

<table>
<thead>
<tr>
<th>Access level:</th>
<th>3</th>
<th>Calculated:</th>
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<th>Data type: FloatingPoint32</th>
</tr>
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<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Scaling:</td>
<td>PERCENT</td>
<td>Data set: -</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Display parameter for output quantity Y of instance NSW 1 of the numeric changeover switch.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20226</td>
<td><strong>NSW 1 run-time group / NSW 1 RTG</strong></td>
</tr>
</tbody>
</table>
|           | **Access level:** 3  
|           | **Calculated:** -  
|           | **Data type:** Integer16  
|           | **Can be changed:** T  
|           | **Scaling:** -  
|           | **Data set:** -  
|           | **Units group:** -  
|           | **Unit selection:** -  
|           | **Min**  
|           | **Max**  
|           | **Factory setting**  
|           | **Description:** Setting parameter for the run-time group in which the instance NSW 1 of the numeric changeover switch is to be called.  
|           | **Value:**  
|           | 5: Run-time group 5  
|           | 6: Run-time group 6  
|           | 9999: Do not calculate  
| p20227    | **NSW 1 run sequence / NSW 1 RunSeq**                                       |
|           | **Access level:** 3  
|           | **Calculated:** -  
|           | **Data type:** Unsigned16  
|           | **Can be changed:** T  
|           | **Scaling:** -  
|           | **Data set:** -  
|           | **Units group:** -  
|           | **Unit selection:** -  
|           | **Min**  
|           | **Max**  
|           | **Factory setting**  
|           | **Description:** Setting parameter for the run sequence of instance NSW 1 within the run-time group set in p20226.  
|           | **Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.  
| p20228    | **CI: LIM 0 input X / LIM 0 input X**                                       |
|           | **Access level:** 3  
|           | **Calculated:** -  
|           | **Data type:** U32 / FloatingPoint32  
|           | **Can be changed:** T  
|           | **Scaling:** PERCENT  
|           | **Data set:** -  
|           | **Units group:** -  
|           | **Unit selection:** -  
|           | **Min**  
|           | **Max**  
|           | **Factory setting**  
|           | **Description:** Sets the signal source of input quantity X of instance LIM 0 of the limiter.  
| p20229    | **LIM 0 upper limit value LU / LIM 0 upper lim LU**                          |
|           | **Access level:** 3  
|           | **Calculated:** -  
|           | **Data type:** FloatingPoint32  
|           | **Can be changed:** T  
|           | **Scaling:** -  
|           | **Data set:** -  
|           | **Units group:** -  
|           | **Unit selection:** -  
|           | **Min**  
|           | **Max**  
|           | **Factory setting**  
|           | **Description:** Setting parameter for the upper limit value LU of instance LIM 0 of the limiter.  
| p20230    | **LIM 0 lower limit value LL / LIM 0 lower lim LL**                          |
|           | **Access level:** 3  
|           | **Calculated:** -  
|           | **Data type:** FloatingPoint32  
|           | **Can be changed:** T  
|           | **Scaling:** -  
|           | **Data set:** -  
|           | **Units group:** -  
|           | **Unit selection:** -  
|           | **Min**  
|           | **Max**  
|           | **Factory setting**  
|           | **Description:** Setting parameter for the lower limit value LL of instance LIM 0 of the limiter.  

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**Parameters**

**Parameter list**

### r20231
**CO: LIM 0 output Y / LIM 0 output Y**

- **Access level:** 3
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** -
- **Scaling:** PERCENT
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** -

**Description:**
Display parameter for the limited output quantity Y of instance LIM 0 of the limiter.

### r20232
**BO: LIM 0 input quantity at the upper limit QU / LIM 0 QU**

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** -
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** -

**Description:**
Display parameter of instance LIM 0 of limiter QU (upper limit reached), i.e. QU = 1 for X >= LU.

### r20233
**BO: LIM 0 input quantity at the lower limit QL / LIM 0 QL**

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned32
- **Can be changed:** -
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -
- **Max:** -
- **Factory setting:** -

**Description:**
Display parameter of instance LIM 0 of limiter QL (lower limit reached), i.e. QL = 1 for X <= LL.

### p20234
**LIM 0 run-time group / LIM 0 RTG**

- **Access level:** 3
- **Calculated:** -
- **Data type:** Integer16
- **Can be changed:** T
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** 5
- **Max:** 9999
- **Factory setting:** 9999

**Value:**
- 5: Run-time group 5
- 6: Run-time group 6
- 9999: Do not calculate

**Description:**
Setting parameter for the run-time group in which instance LIM 0 of the limiter is to be called.

### p20235
**LIM 0 run sequence / LIM 0 RunSeq**

- **Access level:** 3
- **Calculated:** -
- **Data type:** Unsigned16
- **Can be changed:** T
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** 0
- **Max:** 32000
- **Factory setting:** 640

**Description:**
Setting parameter for the run sequence of instance LIM 0 within the run-time group set in p20234.

**Note:**
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20236 CI: LIM 1 input X / LIM 1 input X</td>
<td>Sets the signal source of input quantity X of instance LIM 1 of the limiter.</td>
</tr>
<tr>
<td>p20237 LIM 1 upper limit value LU / LIM 1 upper lim LU</td>
<td>Setting parameter for the upper limit value LU of instance LIM 1 of the limiter.</td>
</tr>
<tr>
<td>p20238 LIM 1 lower limit value LL / LIM 1 lower lim LL</td>
<td>Setting parameter for the lower limit value LL of instance LIM 1 of the limiter.</td>
</tr>
<tr>
<td>r20239 CO: LIM 1 output Y / LIM 1 output Y</td>
<td>Display parameter for the limited output quantity Y of instance LIM 1 of the limiter.</td>
</tr>
<tr>
<td>r20240 BO: LIM 1 input quantity at the upper limit QU / LIM 1 QU</td>
<td>Display parameter of instance LIM 1 of limiter QU (upper limit reached), i.e. QU = 1 for X &gt;= LU.</td>
</tr>
<tr>
<td>r20241 BO: LIM 1 input quantity at the lower limit QL / LIM 1 QL</td>
<td>Display parameter of instance LIM 1 of limiter QL (lower limit reached), i.e. QL = 1 for X &lt;= LL.</td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

| Parameter | Description | Value | Access level | Calculated | Unit selection | Data type | Data set | Factory setting |
|-----------|-------------|-------|--------------|------------|----------------|-----------|-----------|----------------|----------------|
| p20242    | LIM 1 run-time group / LIM 1 RTG | Setting parameter for the run-time group in which instance LIM 1 of the limiter is to be called. | 5: Run-time group 5 6: Run-time group 6 9999: Do not calculate | 3 | - | Integer16 | - | - | 9999 |
| p20243    | LIM 1 run sequence / LIM 1 RunSeq | Setting parameter for the run sequence of instance LIM 1 within the run-time group set in p20242. The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value. | 0: Run sequence 32000: Run sequence 650 | 3 | - | Unsigned16 | - | - | 650 |
| p20244[0...1] | CI: PT1 0 inputs / PT1 0 inputs | Sets the signal source of input quantity X and of setting value SV of instance PT1 0 of the smoothing element. | 0: Input X 1: Setting value SV | 3 | PERCENT | U32 / FloatingPoint32 | - | - | 0 |
| p20245    | BI: PT1 0 accept setting value S / PT1 0 acc set val | Sets the signal source for the "accept setting value" signal of instant PT1 0 of the smoothing element. | 0 | 3 | - | U32 / Binary | - | - | 0 |
| p20246    | PT1 0 smoothing time constant in ms / PT1 0 T_smooth ms | Sets the smoothing time constant T in milliseconds of instance PT1 0 of the smoothing element. | 0.00: Min 340.28235E36: Max | 3 | - | FloatingPoint32 | - | - | 0.00 |
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r20247</strong></td>
<td><strong>CO: PT1 0 output Y / PT1 0 output Y</strong></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: PERCENT</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Min -</td>
<td>Max -</td>
</tr>
<tr>
<td>Factory setting</td>
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</tr>
<tr>
<td><strong>p20248</strong></td>
<td><strong>PT1 0 run-time group / PT1 0 RTG</strong></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>Min 5</td>
<td>Max 9999</td>
</tr>
<tr>
<td>Factory setting 9999</td>
<td></td>
</tr>
<tr>
<td><strong>p20249</strong></td>
<td><strong>PT1 0 run sequence / PT1 0 RunSeq</strong></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td>Min 0</td>
<td>Max 32000</td>
</tr>
<tr>
<td>Factory setting 670</td>
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<tr>
<td><strong>p20250[0...1]</strong></td>
<td><strong>Cl: PT1 1 inputs / PT1 1 inputs</strong></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: T</td>
<td>Scaling: PERCENT</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: U32 / FloatingPoint32</td>
</tr>
<tr>
<td>Min -</td>
<td>Max -</td>
</tr>
<tr>
<td>Factory setting 0</td>
<td></td>
</tr>
<tr>
<td><strong>p20251</strong></td>
<td><strong>BI: PT1 1 accept setting value S / PT1 1 acc set val</strong></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: T</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Data type: U32 / Binary</td>
</tr>
<tr>
<td>Min -</td>
<td>Max -</td>
</tr>
<tr>
<td>Factory setting 0</td>
<td></td>
</tr>
</tbody>
</table>

Description:

- **r20247**: Display parameter for the smoothed output quantity Y of instance PT1 0 of the smoothing element.
- **p20248**: Setting parameter for the run-time group in which instance PT1 0 of the smoothing element is to be called. Value: 5: Run-time group 5 6: Run-time group 6 9999: Do not calculate
- **p20249**: Setting parameter for the run sequence of instance PT1 0 within the run-time group set in p20248. Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.
- **p20250[0...1]**: Sets the signal source of input quantity X and of setting value SV of instance PT1 1 of the smoothing element. Index: [0] = Input X [1] = Setting value SV
- **p20251**: Sets the signal source for the "accept setting value" signal of instant PT1 1 of the smoothing element.
## Parameters

### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Units</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20252</td>
<td>PT1 1 smoothing time constant in ms / PT1 1 T_smooth ms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r20253</td>
<td>CO: PT1 1 output Y / PT1 1 output Y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p20254</td>
<td>PT1 1 run-time group / PT1 1 RTG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p20255</td>
<td>PT1 1 run sequence / PT1 1 RunSeq</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p20256[0...1]</td>
<td>CI: INT 0 inputs / INT 0 inputs</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes
- The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.
- Sets the signal source of input quantity X and of setting value SV of instance INT 0 of the integrator.

### Access level: 3

### Calculated:

### Data type:
- FloatingPoint32
- Integer16
- Unsigned16
- U32 / FloatingPoint32

### Can be changed: T

### Scaling:
- PERCENT

### Min

### Max

### Factory setting

### Units group:

### Unit selection:

### Value:
- 5: Run-time group 5
- 6: Run-time group 6
- 9999: Do not calculate

### Index:
- [0] = Input X
- [1] = Setting value SV
### Parameter List

#### p20257 INT 0 upper limit value LU / INT 0 upper lim LU

<table>
<thead>
<tr>
<th>Description</th>
<th>Parameter</th>
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<th>Data type: FloatingPoint32</th>
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<tr>
<td></td>
<td>-340.28235E36</td>
<td>Max</td>
<td>340.28235E36</td>
<td>Factory setting 0.0000</td>
</tr>
</tbody>
</table>

Sets the upper limit value LU of instance INT 0 of the integrator.

#### p20258 INT 0 lower limit value LL / INT 0 lower lim LL

<table>
<thead>
<tr>
<th>Description</th>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>LL</td>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
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<td>Unit selection: -</td>
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<tr>
<td></td>
<td>-340.28235E36</td>
<td>Max</td>
<td>340.28235E36</td>
<td>Factory setting 0.0000</td>
</tr>
</tbody>
</table>

Sets the lower limit value LL of instance INT 0 of the integrator.

#### p20259 INT 0 integrating time constant in ms / INT 0 T_Integr ms

<table>
<thead>
<tr>
<th>Description</th>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ti</td>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
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<td></td>
<td>Min</td>
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<td>0.00</td>
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<td>340.28235E36</td>
<td>Factory setting 0.00</td>
</tr>
</tbody>
</table>

Sets the integrating time constant Ti in milliseconds of instance INT 0 of the integrator.

#### p20260 BI: INT 0 accept setting value S / INT 0 acc set val

<table>
<thead>
<tr>
<th>Description</th>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: U32 / Binary</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>S</td>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Max</td>
<td>-</td>
<td>Factory setting -</td>
</tr>
</tbody>
</table>

Sets the signal source for the "accept setting value" signal of instant INT 0 of the integrator.

#### r20261 CO: INT 0 output Y / INT 0 output Y

<table>
<thead>
<tr>
<th>Description</th>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: FloatingPoint32</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>Y</td>
<td>Can be changed: -</td>
<td>Scaling: PERCENT</td>
<td>Data set: -</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Max</td>
<td>-</td>
<td>Factory setting -</td>
</tr>
</tbody>
</table>

Display parameter for output quantity Y of instance INT 0 of the integrator.
If LL>= LU, then the output quantity Y = LU.

#### r20262 BO: INT 0 integrator at the upper limit QU / INT 0 QU

<table>
<thead>
<tr>
<th>Description</th>
<th>Parameter</th>
<th>Access level: 3</th>
<th>Calculated: -</th>
<th>Data type: Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>QU</td>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
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<tr>
<td></td>
<td>-</td>
<td>Max</td>
<td>-</td>
<td>Factory setting -</td>
</tr>
</tbody>
</table>

Display parameter for the signal QU that output quantity Y of instance INT 0 of the integrator has reached the upper limit value LU.
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>r20263</td>
<td><strong>BO: INT 0 integrator at the lower limit QL / INT 0 QL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Unsigned32</td>
<td></td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</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>
<tr>
<td><strong>Description:</strong></td>
<td>Display parameter for the signal QL that output quantity Y of instance INT 0 of the integrator has reached the lower limit value LL.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20264</td>
<td><strong>INT 0 run-time group / INT 0 RTG</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
<td>Data type: Integer16</td>
<td></td>
</tr>
<tr>
<td>Can be changed: T</td>
<td>Scaling: -</td>
<td>Data set: -</td>
<td></td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>9999</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Setting parameter for the run-time group in which instance INT 0 of the integrator is to be called.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Value:</strong></td>
<td>5: Run-time group 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6: Run-time group 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9999: Do not calculate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>p20265</td>
<td><strong>INT 0 run sequence / INT 0 RunSeq</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
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<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
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<td>32000</td>
<td>700</td>
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<tr>
<td><strong>Description:</strong></td>
<td>Setting parameter for the run sequence of instance INT 0 within the run-time group set in p20264.</td>
<td></td>
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<tr>
<td><strong>Note:</strong></td>
<td>The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.</td>
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<table>
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<th>Description</th>
<th>Value</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>p20266</td>
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<td>Scaling: PERCENT</td>
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<td>Unit selection: -</td>
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<td>Max</td>
<td>Factory setting</td>
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<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source of input quantity X of instance LVM 0 of the double-sided limiter.</td>
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<table>
<thead>
<tr>
<th>Parameter Code</th>
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<th>Remarks</th>
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<tbody>
<tr>
<td>p20267</td>
<td><strong>LVM 0 interval average value M / LVM 0 avg value M</strong></td>
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<td>Data set: -</td>
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<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-340.28235E36</td>
<td>340.28235E36</td>
<td>0.0000</td>
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</tr>
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<td><strong>Description:</strong></td>
<td>Setting parameter for the interval average M of instance LVM 0 of the double-sided limiter.</td>
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### Parameter List

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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<tbody>
<tr>
<td>p20268 LVM 0 interval limit L</td>
<td>Setting parameter for the interval limit L of instance LVM 0 of the double-sided limiter.</td>
</tr>
<tr>
<td>p20269 LVM 0 hyst HY</td>
<td>Setting parameter for hysteresis HY of instance LVM 0 of the double-sided limiter.</td>
</tr>
<tr>
<td>r20270 BO: LVM 0 input quantity above interval QU</td>
<td>Display parameter of instance LVM 0 of the double-sided limiter that input quantity X was at least once X &gt; M + L and X is &gt;= M + L - HY.</td>
</tr>
<tr>
<td>r20271 BO: LVM 0 input quantity within interval QM</td>
<td>Display parameter of instance LVM 0 of the double-sided limiter that the input quantity X lies within the interval.</td>
</tr>
<tr>
<td>r20272 BO: LVM 0 input quantity below interval QL</td>
<td>Display parameter of instance LVM 0 of the double-sided limiter that input quantity X was at least once X &lt; M - L and X is &lt;= M - L + HY.</td>
</tr>
<tr>
<td>p20273 LVM 0 run-time group</td>
<td>Setting parameter for the run-time group in which instance LVM 0 of the double-sided limiter is to be called.</td>
</tr>
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</table>

**Example Parameter: p20268 LVM 0 interval limit L**

- **Access level:** 3
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Can be changed:** T
- **Scaling:** -
- **Data set:** -
- **Units group:** -
- **Unit selection:** -
- **Min:** -340.28235E36
- **Max:** 340.28235E36
- **Factory setting:** 0.0000

**Description:**
Setting parameter for the interval limit L of instance LVM 0 of the double-sided limiter.
### Parameters

#### Parameter list

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<tr>
<td>6:</td>
<td>Run-time group 6</td>
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<tr>
<td>9999:</td>
<td>Do not calculate</td>
</tr>
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**p20274 LVM 0 run sequence / LVM 0 RunSeq**

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<th>Data set</th>
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<tr>
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<th>Max</th>
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</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<td>720</td>
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</table>

**Description:** Setting parameter for the run sequence of instance LVM 0 within the run-time group set in p20273.

**Note:**
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

**p20275 CI: LVM 1 input X / LVM 1 input X**

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<td>U32 / FloatingPoint32</td>
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<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>PERCENT</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Unit selection</th>
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<table>
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<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
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**Description:** Sets the signal source of input quantity X of instance LVM 1 of the double-sided limiter.

**p20276 LVM 1 interval average value M / LVM 1 avg value M**

<table>
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<tbody>
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<th>Units group</th>
<th>Unit selection</th>
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<table>
<thead>
<tr>
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<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
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**Description:** Setting parameter for the interval average M of instance LVM 1 of the double-sided limiter.

**p20277 LVM 1 interval limit L / LVM 1 limit L**

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<td>-</td>
<td>FloatingPoint32</td>
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<tr>
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<th>Scaling</th>
<th>Data set</th>
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<tbody>
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<td>-</td>
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<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
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<table>
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<tr>
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<th>Max</th>
<th>Factory setting</th>
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<tbody>
<tr>
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<td>340.28235E36</td>
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**Description:** Setting parameter for the interval limit L of instance LVM 1 of the double-sided limiter.

**p20278 LVM 1 hyst HY / LVM 1 hyst HY**

<table>
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<tbody>
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<tr>
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<th>Scaling</th>
<th>Data set</th>
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<th>Unit selection</th>
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<tbody>
<tr>
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<td>340.28235E36</td>
<td>0.0000</td>
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**Description:** Setting parameter for hysteresis HY of instance LVM 1 of the double-sided limiter.
### Parameter list

#### Description:
Display parameter of instance LVM 1 of the double-sided limiter that input quantity X was at least once \( X > M + L \) and \( X \geq M + L - HY \).

#### Description:
Display parameter of instance LVM 1 of the double-sided limiter that the input quantity X lies within the interval.

#### Description:
Display parameter of instance LVM 1 of the double-sided limiter that input quantity X was at least once \( X < M - L \) and \( X \leq M - L + HY \).

#### Setting parameter for the run-time group in which instance LVM 1 of the double-sided limiter is to be called.

**Value:**
- 5: Run-time group 5
- 6: Run-time group 6
- 9999: Do not calculate

#### Setting parameter for the run sequence of instance LVM 1 within the run-time group set in p20282.

**Note:**
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

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<tr>
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<th>Scaling</th>
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<th>Factory setting</th>
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<tr>
<td></td>
<td>Display parameter of instance LVM 1 of the double-sided limiter that input quantity X was at least once ( X &gt; M + L ) and ( X \geq M + L - HY ).</td>
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<tr>
<td>r20280</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
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</tr>
<tr>
<td></td>
<td>Display parameter of instance LVM 1 of the double-sided limiter that the input quantity X lies within the interval.</td>
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<tr>
<td>r20281</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Display parameter of instance LVM 1 of the double-sided limiter that input quantity X was at least once ( X &lt; M - L ) and ( X \leq M - L + HY ).</td>
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<td>Integer16</td>
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<td>5 9999 9999</td>
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<td>p20283</td>
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SINAMICS G120 CU240B/E-2 Control Units List Manual (LH11), 01/2012
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<th>Scaling</th>
<th>Data set</th>
<th>Units group</th>
<th>Unit selection</th>
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<th>Factory setting</th>
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<td>PERCENT</td>
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<td>9999</td>
<td>9999</td>
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<td>32000</td>
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Description:
- Sets the signal source of input quantity X of instance DIF 0 of the differentiating element.
- Sets the differentiating time constant Td in milliseconds of instance DIF 0 of the differentiating element.
- Display parameter for output quantity Y of instance DIF 0 of the differentiating element.
- Setting parameter for the run-time group in which instance DIF 0 of the differentiating element is to be called.
- Setting parameter for the run sequence of instance DIF 0 within the run-time group set in p20287.

Note:
- The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.
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<th>Value</th>
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<td>r20301</td>
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<td>Calculated: -</td>
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<td>Can be changed: -</td>
<td>Data set: -</td>
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<td>Units group: -</td>
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<td>Description:</td>
<td>Display parameter for the inverted output of instance NOT 4 of the inverter.</td>
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<tr>
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<td>2: Run-time group 2</td>
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<tr>
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<td>3: Run-time group 3</td>
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<td>4: Run-time group 4</td>
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<tr>
<td></td>
<td></td>
<td>9999: Do not calculate</td>
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</tr>
<tr>
<td>p20303</td>
<td>NOT 4 run sequence / NOT 4 RunSeq</td>
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</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Setting parameter for the run sequence of instance NOT 4 within the run-time group set in p20302.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.</td>
<td></td>
</tr>
<tr>
<td>p20304</td>
<td>BI: NOT 5 input I / NOT 5 input I</td>
<td>Access level: 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Can be changed: T</td>
<td>Data set: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td>Min: -</td>
<td>Max: 0</td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the signal source of input quantity I of instance NOT 5 of the inverter.</td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r20305</strong></td>
<td>Display parameter for the inverted output of instance NOT 5 of the inverter.</td>
</tr>
<tr>
<td><strong>p20306</strong></td>
<td>Setting parameter for the run-time group in which the instance NOT 5 of the inverter is to be called.</td>
</tr>
<tr>
<td><strong>p20307</strong></td>
<td>Setting parameter for the run sequence of instance NOT 5 within the run-time group set in p20306. Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.</td>
</tr>
<tr>
<td><strong>p20308[0...3]</strong></td>
<td>Sets the signal source of input quantities X0, X1, X2, X3 of instance ADD 2 of the adder.</td>
</tr>
<tr>
<td><strong>r20309</strong></td>
<td>Display parameter for the output quantity Y = X0 + X1 + X2 + X3 of instance ADD 2 of the adder.</td>
</tr>
</tbody>
</table>

---

**r20305**

**BO: NOT 5 inverted output / NOT 5 inv output**

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned32</td>
</tr>
</tbody>
</table>

**Description:**

Display parameter for the inverted output of instance NOT 5 of the inverter.

**Value:**

- 1: Run-time group 1
- 2: Run-time group 2
- 3: Run-time group 3
- 4: Run-time group 4
- 5: Run-time group 5
- 6: Run-time group 6
- 9999: Do not calculate

**p20306**

**NOT 5 run-time group / NOT 5 RTG**

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Integer16</td>
</tr>
</tbody>
</table>

**Description:**

Setting parameter for the run-time group in which the instance NOT 5 of the inverter is to be called.

**Value:**

- 1: Run-time group 1
- 2: Run-time group 2
- 3: Run-time group 3
- 4: Run-time group 4
- 5: Run-time group 5
- 6: Run-time group 6
- 9999: Do not calculate

**p20307**

**NOT 5 run sequence / NOT 5 RunSeq**

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>Unsigned16</td>
</tr>
</tbody>
</table>

**Description:**

Setting parameter for the run sequence of instance NOT 5 within the run-time group set in p20306.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

**p20308[0...3]**

**CI: ADD 2 inputs / ADD 2 inputs**

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>U32 / FloatingPoint32</td>
</tr>
</tbody>
</table>

**Description:**

Sets the signal source of input quantities X0, X1, X2, X3 of instance ADD 2 of the adder.

**Index:**

- [0] = Input X0
- [1] = Input X1
- [2] = Input X2
- [3] = Input X3

**r20309**

**CO: ADD 2 output Y / ADD 2 output Y**

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
<th>Data type</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>

**Description:**

Display parameter for the output quantity Y = X0 + X1 + X2 + X3 of instance ADD 2 of the adder.
### Parameters

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Index</th>
</tr>
</thead>
</table>
| p20310 ADD 2 run-time group / ADD 2 RTG | Setting parameter for the run-time group in which the instance ADD 2 of the adder is to be called. | 5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate |   |
| p20311 ADD 2 run sequence / ADD 2 RunSeq | Setting parameter for the run sequence of instance ADD 2 within the run-time group set in p20310. The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value. | 0  
600  
32000: 800 |   |
| p20312[0...1] CI: NCM 0 inputs / NCM 0 inputs | Sets the signal source of input quantities X0 and X1 of instance NCM 0 of the numeric comparator. |   | 0  
1  
0  
0: 0  
1: 1  
2: 2  
3: 3  
4: 4  
5: 5  
6: 6  
7: 7  
8: 8  
9: 9  
10: A  
11: B  
12: C  
13: D  
14: E  
15: F  
[0] = Input X0  
[1] = Input X1 |
| r20313 BO: NCM 0 output QU / NCM 0 output QU | Display parameter for binary quantity QU of instance NCM 0 of the numeric comparator. QU is only set if X0 > X1. |   |   |
| r20314 BO: NCM 0 output QE / NCM 0 output QE | Display parameter for binary quantity QE of instance NCM 0 of the numeric comparator. QE is only set if X0 = X1. |   |   |
Parameters
Parameter list

**r20315**  BO: NCM 0 output QL / NCM 0 output QL

<table>
<thead>
<tr>
<th>Description:</th>
<th>Display parameter for binary quantity QL of instance NCM 0 of the numeric comparator. QL is only set if X0 &lt; X1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed:</td>
<td></td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**p20316**  NCM 0 run-time group / NCM 0 RTG

<table>
<thead>
<tr>
<th>Description:</th>
<th>Setting parameter for the run-time group in which the instance NCM 0 of the numeric comparator is to be called.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed:</td>
<td></td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>5</td>
<td>9999</td>
</tr>
</tbody>
</table>

**p20317**  NCM 0 run sequence / NCM 0 RunSeq

| Description: | Setting parameter for the run sequence of instance NCM 0 within the run-time group set in p20316.  
Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value. |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed:</td>
<td></td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0</td>
<td>32000</td>
</tr>
</tbody>
</table>

**p20318[0...1]**  CI: NCM 1 inputs / NCM 1 inputs

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the signal source of input quantities X0 and X1 of instance NCM 1 of the numeric comparator.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed:</td>
<td></td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
</tbody>
</table>
| Index: | [0] = Input X0  
[1] = Input X1 |

**r20319**  BO: NCM 1 output QU / NCM 1 output QU

<table>
<thead>
<tr>
<th>Description:</th>
<th>Display parameter for binary quantity QU of instance NCM 1 of the numeric comparator. QU is only set if X0 &gt; X1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed:</td>
<td></td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
**r20320**  **BO: NCM 1 output QE / NCM 1 output QE**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Display parameter for binary quantity QE of instance NCM 1 of the numeric comparator. QE is only set if X0 = X1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
</tbody>
</table>

**r20321**  **BO: NCM 1 output QL / NCM 1 output QL**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Display parameter for binary quantity QL of instance NCM 1 of the numeric comparator. QL is only set if X0 &lt; X1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>-</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
</tbody>
</table>

**p20322**  **NCM 1 run-time group / NCM 1 RTG**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Setting parameter for the run-time group in which the instance NCM 1 of the numeric comparator is to be called.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>T</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>5</td>
</tr>
<tr>
<td>Max</td>
<td>9999</td>
</tr>
</tbody>
</table>

**p20323**  **NCM 1 run sequence / NCM 1 RunSeq**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Setting parameter for the run sequence of instance NCM 1 within the run-time group set in p20322. The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>T</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
</tr>
<tr>
<td>Max</td>
<td>32000</td>
</tr>
</tbody>
</table>

**p20324[0...1]**  **BI: RSR 2 inputs / RSR 2 inputs**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the signal source for set input S and reset input R of instance RSR 2 of the RS flipflop.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>T</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>0</td>
</tr>
</tbody>
</table>

**Index:**

[0] = Set S  
[1] = Reset R
Parameters
Parameter list

**r20325**

**BO: RSR 2 output Q / RSR 2 output Q**

- **Access level:** 3
- **Can be changed:** -
- **Units group:** -
- **Min:** -
- **Max:** -
- **Value:**
  - 1: Run-time group 1
  - 2: Run-time group 2
  - 3: Run-time group 3
  - 4: Run-time group 4
  - 5: Run-time group 5
  - 6: Run-time group 6
  - 9999: Do not calculate

**Description:**
Display parameter for output Q of instance RSR 2 of the RS flipflop

**r20326**

**BO: RSR 2 inverted output QN / RSR 2 inv outp QN**

- **Access level:** 3
- **Can be changed:** -
- **Units group:** -
- **Min:** -
- **Max:** -
- **Value:**
  - 1: Run-time group 1
  - 2: Run-time group 2
  - 3: Run-time group 3
  - 4: Run-time group 4
  - 5: Run-time group 5
  - 6: Run-time group 6
  - 9999: Do not calculate

**Description:**
Display parameter for inverted output QN of instance RSR 2 of the RS flipflop.

**p20327**

**RSR 2 run-time group / RSR 2 RTG**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** 1
- **Max:** 9999
- **Value:**
  - 1: Run-time group 1
  - 2: Run-time group 2
  - 3: Run-time group 3
  - 4: Run-time group 4
  - 5: Run-time group 5
  - 6: Run-time group 6
  - 9999: Do not calculate

**Description:**
Setting parameter for the run-time group in which instance RSR 2 of the RS flipflop is to be called.

**p20328**

**RSR 2 run sequence / RSR 2 RunSeq**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** 0
- **Max:** 7999
- **Value:**
  - 0: Run-time group 1
  - 7999: Do not calculate

**Description:**
Setting parameter for the run sequence of instance RSR 2 within the run-time group set in p20327.

**Note:**
The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

**p20329[0...3]**

**BI: DFR 2 inputs / DFR 2 inputs**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Min:** -
- **Max:** -
- **Value:**
  - 0: Run-time group 1
  - 7999: Do not calculate

**Description:**
Sets the signal source for trigger input I, D input D, set input S, and reset input R of instance DFR 2 of the D flipflop.

**Index:**
- [0] = Trigger input I
- [1] = D input D
- [2] = Set S
- [3] = Reset R
**Parameters**

**Parameter list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r20330</strong></td>
<td><strong>BO: DFR 2 output Q / DFR 2 output Q</strong></td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Description:</td>
<td>Display parameter for output Q of instance DFR 2 of the D flipflop.</td>
</tr>
</tbody>
</table>

<p>| <strong>r20331</strong> | <strong>BO: DFR 2 inverted output QN / DFR 2 inv outp QN</strong> |
| Access level: 3 | Calculated: - | Data type: Unsigned32 |
| Can be changed: - | Scaling: - | Data set: - |
| Units group: - | Unit selection: - | |</p>
<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Display parameter for the inverted output QN of instance DFR 2 of the D flipflop.</td>
<td></td>
</tr>
</tbody>
</table>

| **p20332** | **DFR 2 run-time group / DFR 2 RTG** |
| Access level: 3 | Calculated: - | Data type: Integer16 |
| Can be changed: T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - | |
| Min | Max | Factory setting |
| 1 | 9999 | 9999 |
| Description: | Setting parameter for the run-time group in which instance DFR 2 of the D flipflop is to be called. |
| Value: | 1: Run-time group 1 |
| 2: Run-time group 2 |
| 3: Run-time group 3 |
| 4: Run-time group 4 |
| 5: Run-time group 5 |
| 6: Run-time group 6 |
| 9999: Do not calculate |

| **p20333** | **DFR 2 run sequence / DFR 2 RunSeq** |
| Access level: 3 | Calculated: - | Data type: Unsigned16 |
| Can be changed: T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - | |
| Min | Max | Factory setting |
| 0 | 32000 | 870 |
| Description: | Setting parameter for the run-time group of instance DFR 2 within the run-time group set in p20332. |
| Note: | The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value. |

| **p20334** | **BI: PDE 2 input pulse I / PDE 2 inp_pulse I** |
| Access level: 3 | Calculated: - | Data type: U32 / Binary |
| Can be changed: T | Scaling: - | Data set: - |
| Units group: - | Unit selection: - | |
| Min | Max | Factory setting |
| - | - | 0 |
| Description: | Sets the signal source for the input pulse I of instance PDE 2 of the closing delay device. |
**Parameters**

**Parameter list**

### p20335

**PDE 2 pulse delay time in ms / PDE 2 t\_del ms**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Description:** Setting parameter for pulse delay time T in milliseconds of instance PDE 2 of the closing delay device.
- **Value:**
  - Min: 0.00
  - Max: 5400000.00
  - Factory setting: 0.00

### r20336

**BO: PDE 2 output Q / PDE 2 output Q**

- **Access level:** 3
- **Can be changed:** -
- **Units group:** -
- **Description:** Display parameter for output pulse Q of instance PDE 2 of the closing delay device.
- **Value:**
  - Min: -
  - Max: -
  - Factory setting: -

### p20337

**PDE 2 run-time group / PDE 2 RTG**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Description:** Setting parameter for the run-time group in which instance PDE 2 of the closing delay device is to be called.
- **Value:**
  - 5: Run-time group 5
  - 6: Run-time group 6
  - 9999: Do not calculate

### p20338

**PDE 2 run sequence / PDE 2 RunSeq**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Description:** Setting parameter for the run sequence of instance PDE 2 within the run-time group set in p20337.
- **Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.
- **Value:**
  - Min: 0
  - Max: 32000
  - Factory setting: 890

### p20339

**BI: PDE 3 input pulse I / PDE 3 inp\_pulse I**

- **Access level:** 3
- **Can be changed:** T
- **Units group:** -
- **Description:** Sets the signal source for the input pulse I of instance PDE 3 of the closing delay device.
### Parameter List

#### p20340  PDE 3 pulse delay time in ms / PDE 3 t_del ms

<table>
<thead>
<tr>
<th>Description</th>
<th>Setting parameter for pulse delay time T in milliseconds of instance PDE 3 of the closing delay device.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed</td>
<td>T</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0.00</td>
</tr>
<tr>
<td>Max</td>
<td>5400000.00</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.00</td>
</tr>
</tbody>
</table>

#### r20341  BO: PDE 3 output Q / PDE 3 output Q

<table>
<thead>
<tr>
<th>Description</th>
<th>Display parameter for output pulse Q of instance PDE 3 of the closing delay device.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

#### p20342  PDE 3 run-time group / PDE 3 RTG

<table>
<thead>
<tr>
<th>Description</th>
<th>Setting parameter for the run-time group in which instance PDE 3 of the closing delay device is to be called.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed</td>
<td>T</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>5</td>
</tr>
<tr>
<td>Max</td>
<td>9999</td>
</tr>
<tr>
<td>Factory setting</td>
<td>9999</td>
</tr>
</tbody>
</table>

#### p20343  PDE 3 run sequence / PDE 3 RunSeq

<table>
<thead>
<tr>
<th>Description</th>
<th>Setting parameter for the run sequence of instance PDE 3 within the run-time group set in p20342.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Can be changed</td>
<td>T</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
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#### p20344  BI: PDF 2 input pulse I / PDF 2 inp_pulse I

<table>
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<tr>
<th>Description</th>
<th>Sets the signal source for the input pulse I of instance PDF 2 of the breaking delay device.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level</td>
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</tr>
<tr>
<td>Can be changed</td>
<td>T</td>
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<tr>
<td>Units group</td>
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</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
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</tbody>
</table>
### Parameters

#### Parameter list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p20345</strong></td>
<td><strong>PDF 2 pulse extension time in ms / PDF 2 t_ext ms</strong></td>
<td></td>
<td></td>
</tr>
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<td>Calculated: -</td>
<td>Data type: FloatingPoint32</td>
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<tr>
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<td>Scaling: -</td>
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<tr>
<td>Units group: -</td>
<td></td>
<td>Unit selection: -</td>
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<tr>
<td>Min 0.00</td>
<td>Max 5400000.00</td>
<td>Factory setting 0.00</td>
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</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Setting parameter for pulse extension time T in milliseconds of instance PDF 2 of the breaking delay device.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r20346</strong></td>
<td><strong>BO: PDF 2 output Q / PDF 2 output Q</strong></td>
<td></td>
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<tr>
<td>Min -</td>
<td>Max -</td>
<td>Factory setting -</td>
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</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Display parameter for output pulse Q of instance PDF 2 of the breaking delay device.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p20347</strong></td>
<td><strong>PDF 2 run-time group / PDF 2 RTG</strong></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Calculated: -</td>
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<tr>
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<td><strong>Description:</strong></td>
<td>Setting parameter for the run-time group in which the instance PDF 2 of the breaking delay device is to be called.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Value:</strong> 5:</td>
<td>Run-time group 5</td>
<td>6:</td>
<td>Run-time group 6</td>
</tr>
<tr>
<td>9999: Do not calculate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p20348</strong></td>
<td><strong>PDF 2 run sequence / PDF 2 RunSeq</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td></td>
<td>Calculated: -</td>
<td>Data type: Unsigned16</td>
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<tr>
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<td>Data set: -</td>
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<td>Units group: -</td>
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<tr>
<td>Min 0</td>
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<td>Factory setting 920</td>
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<tr>
<td><strong>Description:</strong></td>
<td>Setting parameter for the run sequence of instance PDF 2 within the run-time group set in p20347.</td>
<td></td>
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</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p20349</strong></td>
<td><strong>BI: PDF 3 input pulse I / PDF 3 inp_pulse I</strong></td>
<td></td>
<td></td>
</tr>
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<td>Factory setting</td>
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</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source for the input pulse I of instance PDF 3 of the breaking delay device.</td>
<td></td>
<td></td>
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<tr>
<td>Parameter</td>
<td>Description</td>
<td>Value</td>
<td>Access level</td>
</tr>
<tr>
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<td>-------------</td>
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<td>--------------</td>
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<tr>
<td>p20350</td>
<td>PDF 3 pulse extension time in ms / PDF 3 t_ext ms</td>
<td>Setting parameter for pulse extension time T in milliseconds of instance PDF 3 of the breaking delay device.</td>
<td></td>
</tr>
<tr>
<td>r20351</td>
<td>BO: PDF 3 output Q / PDF 3 output Q</td>
<td>Display parameter for output pulse Q of instance PDF 3 of the breaking delay device.</td>
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</tr>
<tr>
<td>p20352</td>
<td>PDF 3 run-time group / PDF 3 RTG</td>
<td>Setting parameter for the run-time group in which the instance PDF 3 of the breaking delay device is to be called.</td>
<td>5: Run-time group 5</td>
</tr>
<tr>
<td>p20353</td>
<td>PDF 3 run sequence / PDF 3 RunSeq</td>
<td>Setting parameter for the run sequence of instance PDE 3 within the run-time group set in p20352.</td>
<td></td>
</tr>
<tr>
<td>p20354</td>
<td>BI: MFP 2 input pulse I / MFP 2 inp_pulse I</td>
<td>Sets the signal source for the input pulse I of instance MFP 2 of the pulse generator.</td>
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### Parameters

#### Parameter list

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<th>Data type</th>
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<tbody>
<tr>
<td><strong>p20355</strong></td>
<td>MFP 2 pulse duration in ms / MFP 2 pulse_dur ms</td>
<td>Setting parameter for pulse duration T in milliseconds of instance MFP 2 of the pulse generator.</td>
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<td></td>
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<tr>
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<td>Display parameter for output pulse Q of instance MFP 2 of the pulse generator.</td>
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<td>Data set: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<tr>
<td><strong>p20357</strong></td>
<td>MFP 2 run-time group / MFP 2 RTG</td>
<td>Setting parameter for the run-time group in which the instance MFP 2 of the pulse generator is to be called.</td>
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<td>Data set: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>6: Run-time group 6</td>
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<td></td>
<td></td>
<td></td>
<td>9999: Do not calculate</td>
<td>5</td>
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<tr>
<td><strong>p20358</strong></td>
<td>MFP 2 run sequence / MFP 2 RunSeq</td>
<td>Setting parameter for the run sequence of instance MFP 2 within the run-time group set in p20357.</td>
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<td>Data set: -</td>
<td>Units group: -</td>
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<td></td>
</tr>
<tr>
<td><strong>p20359</strong></td>
<td>BI: MFP 3 input pulse I / MFP 3 inp_pulse I</td>
<td>Sets the signal source for the input pulse I of instance MFP 3 of the pulse generator.</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Access level: 3</td>
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<td>Data type: U32 / Binary</td>
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<td>Max</td>
<td>Factory setting</td>
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### Parameters

#### Parameter list

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<td>MFP 3 pulse duration in ms / MFP 3 pulse_duration ms</td>
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<tr>
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<td><strong>Scaling:</strong> -</td>
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<tr>
<td><strong>Units group:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Min:</strong> 0.00</td>
<td><strong>Max:</strong> 5400000.00</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Setting parameter for pulse duration T in milliseconds of instance MFP 3 of the pulse generator.</td>
</tr>
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</table>

| **r20361** | BO: MFP 3 output Q / MFP 3 output Q |
| **Access level:** 3 | **Calculated:** - | **Data type:** Unsigned32 |
| **Can be changed:** - | **Scaling:** - | **Data set:** - |
| **Units group:** - | **Unit selection:** - | |
| **Min:** - | **Max:** - | **Factory setting:** - |
| **Description:** | Display parameter for output pulse Q of instance MFP 3 of the pulse generator. |

| **p20362** | MFP 3 run-time group / MFP 3 RTG |
| **Access level:** 3 | **Calculated:** - | **Data type:** Integer16 |
| **Can be changed:** T | **Scaling:** - | **Data set:** - |
| **Units group:** - | **Unit selection:** - | |
| **Min:** 5 | **Max:** 9999 | **Factory setting:** 9999 |
| **Description:** | Setting parameter for the run-time group in which the instance MFP 3 of the pulse generator is to be called. |
| **Value:** | 5: Run-time group 5 |
| | 6: Run-time group 6 |
| | 9999: Do not calculate |

| **p20363** | MFP 3 run sequence / MFP 3 RunSeq |
| **Access level:** 3 | **Calculated:** - | **Data type:** Unsigned16 |
| **Can be changed:** T | **Scaling:** - | **Data set:** - |
| **Units group:** - | **Unit selection:** - | |
| **Min:** 0 | **Max:** 32000 | **Factory setting:** 960 |
| **Description:** | Setting parameter for the run sequence of instance MFP 3 within the run-time group set in p20362. |
| **Note:** | The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value. |

| **p20372** | CI: PLI 0 input X / PLI 0 input X |
| **Access level:** 3 | **Calculated:** - | **Data type:** U32 / FloatingPoint32 |
| **Can be changed:** T | **Scaling:** PERCENT | **Data set:** - |
| **Units group:** - | **Unit selection:** - | |
| **Min:** - | **Max:** - | **Factory setting:** 0 |
| **Description:** | Sets the signal source for input X of the polyline (20 breakpoints) of instance PLI 0. |
**r20373**

**CO: PLI 0 output Y / PLI 0 output Y**

<table>
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<tr>
<th>Description</th>
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</thead>
<tbody>
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<td>Unit selection:</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 parameter for the output quantity Y of the polyline (20 breakpoints) of instance PLI 0

### Index:

- [0] = Breakpoint 0
- [1] = Breakpoint 1
- [2] = Breakpoint 2
- [3] = Breakpoint 3
- [4] = Breakpoint 4
- [5] = Breakpoint 5
- [6] = Breakpoint 6
- [7] = Breakpoint 7
- [8] = Breakpoint 8
- [9] = Breakpoint 9
- [10] = Breakpoint 10
- [12] = Breakpoint 12
- [14] = Breakpoint 14
- [15] = Breakpoint 15
- [16] = Breakpoint 16
- [17] = Breakpoint 17
- [18] = Breakpoint 18
- [19] = Breakpoint 19

**p20374[0...19]**

**PLI 0 X-coordinate, A breakpoint / PLI 0 X-coordinate**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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<td>Can be changed:</td>
<td>T</td>
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<td>Scaling:</td>
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<td>Data set:</td>
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<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-340.28235E36</td>
</tr>
<tr>
<td>Max</td>
<td>340.28235E36</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

**Description:** Sets the x-coordinates for the breakpoints (A0...A19) of the polyline (20 breakpoints) of instance PLI 0

### Index:

- [0] = Breakpoint 0
- [1] = Breakpoint 1
- [2] = Breakpoint 2
- [3] = Breakpoint 3
- [4] = Breakpoint 4
- [5] = Breakpoint 5
- [6] = Breakpoint 6
- [7] = Breakpoint 7
- [8] = Breakpoint 8
- [9] = Breakpoint 9
- [10] = Breakpoint 10
- [12] = Breakpoint 12
- [14] = Breakpoint 14
- [15] = Breakpoint 15
- [16] = Breakpoint 16
- [17] = Breakpoint 17
- [18] = Breakpoint 18
- [19] = Breakpoint 19

**p20375[0...19]**

**PLI 0 Y-coordinate, B breakpoint / PLI 0 Y-coordinate**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
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<tr>
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<td>Data type:</td>
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<td>Can be changed:</td>
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<td>Scaling:</td>
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<td>Data set:</td>
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<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-340.28235E36</td>
</tr>
<tr>
<td>Max</td>
<td>340.28235E36</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

**Description:** Sets the y-coordinates for the breakpoints (B0...B19) of the polyline (20 breakpoints) of instance PLI 0

### Index:

- [0] = Breakpoint 0
- [1] = Breakpoint 1
- [2] = Breakpoint 2
- [3] = Breakpoint 3
- [4] = Breakpoint 4
- [5] = Breakpoint 5
- [6] = Breakpoint 6
- [7] = Breakpoint 7
- [8] = Breakpoint 8
- [9] = Breakpoint 9
- [10] = Breakpoint 10
- [12] = Breakpoint 12
p20376  **PLI 0 run-time group / PLI 0 RTG**

**Access level:** 3  
**Calculated:** -  
**Data type:** Integer16  
**Can be changed:** T  
**Scaling:** -  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  

**Min:** 5  
**Max:** 9999  
**Factory setting:** 9999

**Description:** Setting parameter for the run-time group in which instance PLI 0 of the polyline is to be called.

**Value:**  
5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate

**p20377  **PLI 0 run sequence / PLI 0 RunSeq**

**Access level:** 3  
**Calculated:** -  
**Data type:** Unsigned16  
**Can be changed:** T  
**Scaling:** -  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  

**Min:** 0  
**Max:** 32000  
**Factory setting:** 980

**Description:** Setting parameter for the run sequence of instance PLI 0 within the run-time group set in p20376.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

**p20378  **CI: PLI 1 input X / PLI 1 input X**

**Access level:** 3  
**Calculated:** -  
**Data type:** U32 / FloatingPoint32  
**Can be changed:** T  
**Scaling:** PERCENT  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  

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

**Description:** Sets the signal source for input X of the polyline (20 breakpoints) of instance PLI 1.

**r20379  **CO: PLI 1 output Y / PLI 1 output Y**

**Access level:** 3  
**Calculated:** -  
**Data type:** FloatingPoint32  
**Can be changed:** -  
**Scaling:** PERCENT  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  

**Min:** -  
**Max:** -  
**Factory setting:** -

**Description:** Display parameter for the output quantity Y of the polyline (20 breakpoints) of instance PLI 1.

**p20380[0...19]  **PLI 1 X-coordinate, A breakpoint / PLI 1 X-coordinate**

**Access level:** 3  
**Calculated:** -  
**Data type:** FloatingPoint32  
**Can be changed:** T  
**Scaling:** PERCENT  
**Data set:** -  
**Units group:** -  
**Unit selection:** -  

**Min:** -340.28235E36  
**Max:** 340.28235E36  
**Factory setting:** 0.0000

**Description:** Sets the x-coordinates for the breakpoints (A0...A19) of the polyline (20 breakpoints) of instance PLI 1.
**Parameters**

**Parameter list**

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>= Breakpoint 0</td>
</tr>
<tr>
<td>[1]</td>
<td>= Breakpoint 1</td>
</tr>
<tr>
<td>[2]</td>
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<td>[14]</td>
<td>= Breakpoint 14</td>
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<td>[18]</td>
<td>= Breakpoint 18</td>
</tr>
<tr>
<td>[19]</td>
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**p20381[0...19]**

**PLI 1 Y-coordinate, B breakpoint / PLI 1 Y-coordinate**

<table>
<thead>
<tr>
<th>Access level</th>
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<th>Data type</th>
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<tr>
<td>3</td>
<td>-</td>
<td>FloatingPoint32</td>
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<tr>
<th>Can be changed</th>
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<th>Data set</th>
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<tr>
<td>T</td>
<td>PERCENT</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
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</thead>
<tbody>
<tr>
<td>-</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-340.28235E36</td>
<td>340.28235E36</td>
<td>0.0000</td>
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</table>

**Index**: Sets the y-coordinates for the breakpoints (B0...B19) of the polyline (20 breakpoints) of instance PLI 1.

**p20382**

**PLI 1 run-time group / PLI 1 RTG**

<table>
<thead>
<tr>
<th>Access level</th>
<th>Calculated</th>
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<table>
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<tr>
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<th>Scaling</th>
<th>Data set</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
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</table>

<table>
<thead>
<tr>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>9999</td>
<td>9999</td>
</tr>
</tbody>
</table>

**Description**: Setting parameter for the run-time group in which instance PLI 1 of the polyline is to be called.

**Value**: 5: Run-time group 5 6: Run-time group 6 9999: Do not calculate
<table>
<thead>
<tr>
<th>p20383</th>
<th>PLI 1 run sequence / PLI 1 RunSeq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access level:</td>
<td>3</td>
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<tr>
<td>Calculated:</td>
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<tr>
<td>Data type:</td>
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<tr>
<td>Can be changed:</td>
<td>T</td>
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<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Data set:</td>
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<td>Max</td>
<td>32000</td>
</tr>
<tr>
<td>Factory setting</td>
<td>990</td>
</tr>
</tbody>
</table>

Description: Setting parameter for the run sequence of instance PLI 1 within the run-time group set in p20382.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.
### 1.3 Command and drive data sets - overview

#### 1.3.1 Command data sets (CDS)

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p064[0...n]</td>
<td>CI: Current limit, variable / Curr lim var</td>
</tr>
<tr>
<td>p082[0...n]</td>
<td>BI: Drive Data Set selection DDS bit 0 / DDS select., bit 0</td>
</tr>
<tr>
<td>p084[0...n]</td>
<td>BI: ON / OFF (OFF1) / ON / OFF (OFF1)</td>
</tr>
<tr>
<td>p0844[0...n]</td>
<td>BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1</td>
</tr>
<tr>
<td>p0845[0...n]</td>
<td>BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2</td>
</tr>
<tr>
<td>p0848[0...n]</td>
<td>BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1</td>
</tr>
<tr>
<td>p0849[0...n]</td>
<td>BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2</td>
</tr>
<tr>
<td>p0852[0...n]</td>
<td>BI: Enable operation/inhibit operation / Operation enable</td>
</tr>
<tr>
<td>p0854[0...n]</td>
<td>BI: Control by PLC/no control by PLC / Master ctrl by PLC</td>
</tr>
<tr>
<td>p0855[0...n]</td>
<td>BI: Unconditionally release holding brake / Uncond open brake</td>
</tr>
<tr>
<td>p0856[0...n]</td>
<td>BI: Speed controller enable / n_ctrl enable</td>
</tr>
<tr>
<td>p0858[0...n]</td>
<td>BI: Unconditionally close holding brake / Uncond close brake</td>
</tr>
<tr>
<td>p100[0...n]</td>
<td>Speed setpoint selection / n_set sel</td>
</tr>
<tr>
<td>p102[0...n]</td>
<td>BI: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0</td>
</tr>
<tr>
<td>p1021[0...n]</td>
<td>BI: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1</td>
</tr>
<tr>
<td>p1022[0...n]</td>
<td>BI: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2</td>
</tr>
<tr>
<td>p1023[0...n]</td>
<td>BI: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3</td>
</tr>
<tr>
<td>p1035[0...n]</td>
<td>BI: Motorized potentiometer setpoint raise / Mop raise</td>
</tr>
<tr>
<td>p1036[0...n]</td>
<td>BI: Motorized potentiometer lower setpoint / Mop lower</td>
</tr>
<tr>
<td>p1039[0...n]</td>
<td>BI: Motorized potentiometer inversion / MotP inv</td>
</tr>
<tr>
<td>p104[0...n]</td>
<td>BI: Motorized potentiometer manual/automatic / Mop manual/auto</td>
</tr>
<tr>
<td>p1042[0...n]</td>
<td>CI: Motorized potentiometer automatic setpoint / Mop auto setpoint</td>
</tr>
<tr>
<td>p1043[0...n]</td>
<td>BI: Motorized potentiometer accept setting value / MotP acc set val</td>
</tr>
<tr>
<td>p1044[0...n]</td>
<td>CI: Motorized potentiometer setting value / Mop set val</td>
</tr>
<tr>
<td>p105[0...n]</td>
<td>CI: Speed limit RFG positive direction of rotation / n_limit RFG pos</td>
</tr>
<tr>
<td>p1052[0...n]</td>
<td>CI: Speed limit RFG negative direction of rotation / n_limit RFG neg</td>
</tr>
<tr>
<td>p1055[0...n]</td>
<td>BI: Jog bit 0 / Jog bit 1</td>
</tr>
<tr>
<td>p1056[0...n]</td>
<td>BI: Jog bit 1 / Jog bit 1</td>
</tr>
<tr>
<td>p107[0...n]</td>
<td>CI: Main setpoint / Main setpoint</td>
</tr>
<tr>
<td>p1071[0...n]</td>
<td>CI: Main setpoint scaling / Main setp scal</td>
</tr>
<tr>
<td>p1075[0...n]</td>
<td>CI: Supplementary setpoint / Suppl setp</td>
</tr>
<tr>
<td>p1076[0...n]</td>
<td>CI: Supplementary setpoint scaling / Suppl setp scal</td>
</tr>
<tr>
<td>p108[0...n]</td>
<td>CI: Speed limit in positive direction of rotation / n_limit pos</td>
</tr>
<tr>
<td>p1088[0...n]</td>
<td>CI: Speed limit in negative direction of rotation / n_limit neg</td>
</tr>
<tr>
<td>p110[0...n]</td>
<td>CI: Minimum speed signal source / n_min s_src</td>
</tr>
<tr>
<td>p1108[0...n]</td>
<td>BI: Total setpoint selection / Total setp sel</td>
</tr>
<tr>
<td>p1109[0...n]</td>
<td>CI: Total setpoint / Total setp</td>
</tr>
<tr>
<td>p1110[0...n]</td>
<td>BI: Inhibit negative direction / Inhib neg dir</td>
</tr>
<tr>
<td>p1111[0...n]</td>
<td>BI: Inhibit positive direction / Inhib pos dir</td>
</tr>
<tr>
<td>p1113[0...n]</td>
<td>BI: Setpoint inversion / Setp inv</td>
</tr>
<tr>
<td>p1122[0...n]</td>
<td>BI: Bypass ramp-function generator / Bypass RFG</td>
</tr>
<tr>
<td>p1138[0...n]</td>
<td>CI: Up ramp scaling / Up ramp scaling</td>
</tr>
<tr>
<td>p1139[0...n]</td>
<td>CI: Down ramp scaling / Down ramp scaling</td>
</tr>
<tr>
<td>p1140[0...n]</td>
<td>BI: Enable ramp-function generator/inhibit ramp-function generator / RFG enable</td>
</tr>
<tr>
<td>p1141[0...n]</td>
<td>BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG</td>
</tr>
</tbody>
</table>
Command and drive data sets - overview

Parameters

- **p1142[0...n]**: BI: Enable setpoint/inhibit setpoint / Setpoint enable
- **p1143[0...n]**: BI: Ramp-function generator, accept setting value / RFG accept set v
- **p1144[0...n]**: CI: Ramp-function generator setting value / RFG setting value
- **p1155[0...n]**: CI: Speed controller speed setpoint 1 / n_ctrl n_set 1
- **p1160[0...n]**: CI: Speed controller speed setpoint 2 / n_ctrl n_set 2
- **p1201[0...n]**: BI: Flying restart enable signal source / Fly_res enab S_src
- **p1230[0...n]**: BI: DC braking activation / DC brake act
- **p1330[0...n]**: CI: U/f control independent voltage setpoint / Uf U_set independ.
- **p1352[0...n]**: CI: Motor holding brake starting frequency signal source / Brake f_start
- **p1455[0...n]**: CI: Speed controller P gain adaptation signal / n_ctr adapt_sig Kp
- **p1466[0...n]**: CI: Speed controller P-gain scaling / n_ctrl Kp scal
- **p1475[0...n]**: CI: Speed controller torque setting value for motor holding brake / n_ctrl M_pv MHB
- **p1476[0...n]**: BI: Speed controller hold integrator / n_ctrl integ stop
- **p1477[0...n]**: BI: Speed controller set integrator value / n_ctrl integ set
- **p1478[0...n]**: CI: Speed controller integrator setting value / n_ctr integ_setVal
- **p1486[0...n]**: CI: Droop compensation torque / Droop M_comp
- **p1492[0...n]**: BI: Droop feedback enable / Droop enable
- **p1500[0...n]**: Torque setpoint selection / M_set sel
- **p1501[0...n]**: BI: Change over between closed-loop speed/torque control / Changeov n/M_ctrl
- **p1503[0...n]**: CI: Torque setpoint / M_set
- **p1511[0...n]**: CI: Supplementary torque 1 / M_suppl 1
- **p1512[0...n]**: CI: Supplementary torque 1 scaling / M_suppl 1 scal
- **p1513[0...n]**: CI: Supplementary torque 2 / M_suppl 2
- **p1522[0...n]**: CI: Torque limit upper / M_max upper
- **p1523[0...n]**: CI: Torque limit lower / M_max lower
- **p1528[0...n]**: CI: Torque limit upper scaling / M_max upper scal
- **p1529[0...n]**: CI: Torque limit lower scaling / M_max lower scal
- **p1552[0...n]**: CI: Torque limit upper scaling without offset / M_max up w/o offs
- **p1554[0...n]**: CI: Torque limit lower scaling without offset / M_max low w/o offs
- **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
- **p2144[0...n]**: BI: Motor stall monitoring enable (negated) / Mot stall enab neg
- **p2148[0...n]**: BI: RFG active / RFG active
- **p2151[0...n]**: CI: Speed setpoint for messages/signals / n_set for msg
- **p2200[0...n]**: BI: Technology controller enable / Tec_ctrl enable
- **p2220[0...n]**: BI: Technology controller fixed value selection bit 0 / Tec_ctrl sel bit 0
- **p2221[0...n]**: BI: Technology controller fixed value selection bit 1 / Tec_ctrl sel bit 1
- **p2222[0...n]**: BI: Technology controller fixed value selection bit 2 / Tec_ctrl sel bit 2
- **p2223[0...n]**: BI: Technology controller fixed value selection bit 3 / Tec_ctrl sel bit 3
- **p2235[0...n]**: BI: Technology controller motorized potentiometer raise setpoint / Tec_ctrl mop raise
- **p2236[0...n]**: BI: Technology controller motorized potentiometer lower setpoint / Tec_ctrl mop lower
- **p2253[0...n]**: CI: Technology controller setpoint 1 / Tec_ctrl setp 1
- **p2254[0...n]**: CI: Technology controller setpoint 2 / Tec_ctrl setp 2
- **p2264[0...n]**: CI: Technology controller actual value / Tec_ctrl act val
- **p2286[0...n]**: BI: Hold technology controller integrator / Tec_ctr integ stop

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Parameters

Command and drive data sets - overview

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2289[0...n]</td>
<td>CI: Technology controller pre-control signal / Tec_ctrl_prcntrol</td>
</tr>
<tr>
<td>p2296[0...n]</td>
<td>CI: Technology controller output scaling / Tec_ctrl_outp_scal</td>
</tr>
<tr>
<td>p2297[0...n]</td>
<td>CI: Technology controller maximum limit signal source / Tec_ctrlMaxLimS_src</td>
</tr>
<tr>
<td>p2298[0...n]</td>
<td>CI: Technology controller minimum limit signal source / Tec_ctrl_min_l_s_s</td>
</tr>
<tr>
<td>p2299[0...n]</td>
<td>CI: Technology controller limit offset / Tech_ctrl_lim_offs</td>
</tr>
<tr>
<td>p3111[0...n]</td>
<td>BI: External fault 3, enable / Ext fault 3 enab</td>
</tr>
<tr>
<td>p3112[0...n]</td>
<td>BI: External fault 3 enable negated / Ext flt 3 enab neg</td>
</tr>
<tr>
<td>p3230[0...n]</td>
<td>CI: Load monitoring, speed actual value / Load_monit_n_act</td>
</tr>
<tr>
<td>p3232[0...n]</td>
<td>BI: Load monitoring failure detection / Load_moni fail_det</td>
</tr>
<tr>
<td>p3330[0...n]</td>
<td>BI: 2/3 wire control command 1 / 2/3 wire cmd 1</td>
</tr>
<tr>
<td>p3331[0...n]</td>
<td>BI: 2/3 wire control command 2 / 2/3 wire cmd 2</td>
</tr>
<tr>
<td>p3332[0...n]</td>
<td>BI: 2/3 wire control command 3 / 2/3 wire cmd 3</td>
</tr>
</tbody>
</table>
1.3.2 Drive data sets (DDS)

Product: SINAMICS G120 CU240, Version: 4502400, Language: eng, Type: DDS

- p0340[n...n] Automatic calculation, motor/control parameters / Calc auto par
- p0640[n...n] Current limit / Current limit
- p1001[n...n] CO: Fixed speed setpoint 1 / n_set_fixed 1
- p1002[n...n] CO: Fixed speed setpoint 2 / n_set_fixed 2
- p1003[n...n] CO: Fixed speed setpoint 3 / n_set_fixed 3
- p1004[n...n] CO: Fixed speed setpoint 4 / n_set_fixed 4
- p1005[n...n] CO: Fixed speed setpoint 5 / n_set_fixed 5
- p1006[n...n] CO: Fixed speed setpoint 6 / n_set_fixed 6
- p1007[n...n] CO: Fixed speed setpoint 7 / n_set_fixed 7
- p1008[n...n] CO: Fixed speed setpoint 8 / n_set_fixed 8
- p1009[n...n] CO: Fixed speed setpoint 9 / n_set_fixed 9
- p1010[n...n] CO: Fixed speed setpoint 10 / n_set_fixed 10
- p1011[n...n] CO: Fixed speed setpoint 11 / n_set_fixed 11
- p1012[n...n] CO: Fixed speed setpoint 12 / n_set_fixed 12
- p1013[n...n] CO: Fixed speed setpoint 13 / n_set_fixed 13
- p1014[n...n] CO: Fixed speed setpoint 14 / n_set_fixed 14
- p1015[n...n] CO: Fixed speed setpoint 15 / n_set_fixed 15
- p1030[n...n] Motorized potentiometer configuration / Mop configuration
- p1037[n...n] Motorized potentiometer maximum speed / MotP n_max
- p1038[n...n] Motorized potentiometer minimum speed / MotP n_min
- p1040[n...n] Motorized potentiometer starting value / Mop start value
- p1047[n...n] Motorized potentiometer ramp-up time / Mop ramp-up time
- p1048[n...n] Motorized potentiometer ramp-down time / Mop ramp-down time
- p1059[n...n] Jog 2 speed setpoint / Jog 1 n_set
- p1059[n...n] Jog 2 speed setpoint / Jog 2 n_set
- p1063[n...n] Speed limit setpoint channel / n_limit setp
- p1080[n...n] Minimum speed / n_min
- p1082[n...n] Maximum speed / n_max
- p1083[n...n] CO: Speed limit in positive direction of rotation / n_limit pos
- p1086[n...n] CO: Speed limit in negative direction of rotation / n_limit neg
- p1091[n...n] Skip speed 1 / n_skip 1
- p1092[n...n] Skip speed 2 / n_skip 2
- p1093[n...n] Skip speed 3 / n_skip 3
- p1094[n...n] Skip speed 4 / n_skip 4
- p1101[n...n] Skip speed bandwidth / n_skip bandwidth
- p1120[n...n] Ramp-function generator ramp-up time / RFG ramp-up time
- p1121[n...n] Ramp-function generator ramp-down time / RFG ramp-down time
- p1123[n...n] Ramp-function generator minimum ramp-up time / RFG t_RU min
- p1127[n...n] Ramp-function generator minimum ramp-down time / RFG t_RD min
- p1130[n...n] Ramp-function generator initial rounding-off time / RFG t_start_round
- p1131[n...n] Ramp-function generator final rounding-off time / RFG t_end_delay
- p1134[n...n] Ramp-function generator rounding-off type / RFG round-off type
- p1135[n...n] OFF3 ramp-down time / OFF3 t_RD
- p1136[n...n] OFF3 initial rounding-off time / RFG/OFF3 t_strtRnd
- p1137[n...n] OFF3 final rounding-off time / RFG OFF3 t_end_del
- p1145[n...n] Ramp-function generator tracking intensity / RFG track intensity
- p1148[n...n] Ramp-function gen., tolerance for ramp-up and ramp-down active / RFG tol HL/RL act
- p1200[n...n] Flying restart operating mode / FlyRest op_mode
- p1202[n...n] Flying restart search current / FlyRest I_srch
- p1203[n...n] Flying restart search rate factor / FlyRst v_Srch Fact
Parameters
Command and drive data sets - overview

- p1226[0...n] Threshold for zero speed detection / n_standstill n_threshold
- p1240[0...n] Vdc controller configuration (vector control) / Vdc_ctrl config vec
- p1243[0...n] Vdc_max controller dynamic factor / Vdc_max dyn_factor
- p1245[0...n] Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level
- p1247[0...n] Vdc_min controller dynamic factor (kinetic buffering) / Vdc_min dyn_factor
- p1249[0...n] Vdc_max controller speed threshold / Vdc_max n_threshold
- p1250[0...n] Vdc controller proportional gain / Vdc_ctrl Kp
- p1251[0...n] Vdc controller integral time / Vdc_ctrl T
- p1252[0...n] Vdc controller rate time / Vdc_ctrl t_rate
- p1255[0...n] Vdc_min controller time threshold / Vdc_min t_threshold
- p1256[0...n] Vdc_min controller response (kinetic buffering) / Vdc_min response
- p1257[0...n] Vdc_min controller speed threshold / Vdc_min n_threshold
- p1280[0...n] Vdc controller configuration (U/f) / Vdc_ctrl config U/f
- p1283[0...n] Vdc_max controller dynamic factor (U/f) / Vdc_max dyn_factor
- p1285[0...n] Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level
- p1287[0...n] Vdc_min controller dynamic factor (kinetic buffering) (U/f) / Vdc_min dyn_factor
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Product: SINAMICS G120 CU240, Version: 4502400, Language: eng, Type: MDS

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<td>Motor saturation characteristic I_mag 2 / Mot sat. I_mag 2</td>
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<tr>
<td>p0368[n]</td>
<td>Motor saturation characteristic I_mag 3 / Mot sat. I_mag 3</td>
</tr>
</tbody>
</table>
Parameters

p0369[0...n] Motor saturation characteristic I_mag 4 / Mot sat. I_mag 4
r0370[0...n] Motor stator resistance, cold / Mot R_stator cold
r0372[0...n] Cable resistance / Mot R_cable
r0373[0...n] Motor rated stator resistance / Mot R_stator rated
r0374[0...n] Motor rotor resistance cold / Mot R_r cold
r0376[0...n] Rated motor rotor resistance / Mot RRotor rated
r0377[0...n] Motor leakage inductance, total / Mot L_leak total
r0378[0...n] Motor stator inductance, d axis / Mot L_stator d
r0382[0...n] Motor magnetizing inductance transformed / Mot L_magn transf
r0384[0...n] Motor rotor time constant / damping time constant d axis / Mot T_rotor/T_Dd
r0386[0...n] Motor stator leakage time constant / Mot T_stator leak
r0395[0...n] Actual stator resistance / R_stator act
r0396[0...n] Actual rotor resistance / R_rotor act
p0600[0...n] Motor temperature sensor type / Mot temp_sens type
p0604[0...n] Mot temp_mod 1/KTY alarm threshold / Mod 1/KTY A thresh
p0605[0...n] Mot temp_mod 1/2 threshold / Threshold
p0606[0...n] Mot temp_mod 2/KTY timer / Mod 2/KTY t_timer
p0607[0...n] Temperature sensor fault timer / Sensor fault time
p0610[0...n] Motor overtemperature response / Mot temp response
p0611[0...n] I2t motor model thermal time constant / I2t mot_mod T
p0612[0...n] Mot temp_mod activation / Mot_temp_mod act
p0615[0...n] Mot temp_mod 1 (I2t) fault threshold / I2t F thresh
p0620[0...n] Thermal adaptation, stator and rotor resistance / Mot therm_adapt R
p0621[0...n] Identification stator resistance after restart / Rst_ident Restart
p0622[0...n] Motor excitation time for Rs_ident after powering up again / t_excit Rs_id
p0625[0...n] Motor ambient temperature / Mot T_ambient
p0626[0...n] Motor overtemperature, stator core / Mot T_over core
p0627[0...n] Motor overtemperature, stator winding / Mot T_over stator
p0628[0...n] Motor overtemperature rotor winding / Mot T_over rotor
r0630[0...n] Mot temp_mod ambient temperature / Mod T_ambient
r0631[0...n] Mot temp_mod stator iron temperature / Mod T_stator
r0632[0...n] Mot temp_mod stator winding temperature / Mod T_winding
r0633[0...n] Mot temp_mod rotor temperature / Mod T_rotor
p0634[0...n] Q flux flux constant unsaturated / PSIQ KPSI UNSAT
p0635[0...n] Q flux quadrature axis current constant unsaturated / PSIQ KIQ UNSAT
p0636[0...n] Q flux direct axis current constant unsaturated / PSIQ KID UNSAT
p0637[0...n] Q flux flux gradient saturated / PSIQ Grad SAT
p0650[0...n] Actual motor operating hours / Mot t_oper act
p0651[0...n] Motor operating hours maintenance interval / Mot t_op maint
p0828[0...n] Motor changeover, motor number / Mot_chng mot No.
p1231[0...n] DC braking configuration / DCBRK config
p1232[0...n] DC braking, braking current / DCBRK I_brake
p1233[0...n] DC braking time / DCBRK time
p1234[0...n] Speed at the start of DC braking / DCBRK n_start
p1909[0...n] Motor data identification control word / MotID STW
p1980[0...n] PolID technique / PolID technique
p1999[0...n] Ang. commutation offset calibr. and PolID scaling / Com_ang_offs scal
r3926[0...n] Voltage generation alternating base voltage amplitude / U_gen altern base
1.3.4 Power unit data sets (PDS)

Product: SINAMICS G120 CU240, Version: 4502400, Language: eng, Type: PDS

- p0124[0...n] CU detection via LED / CU detection LED
- r0200[0...n] Power unit code number actual / PU code no. act
- p0201[0...n] Power unit code number / PU code no
- r0203[0...n] Actual power unit type / PU actual type
- r0204[0...n] Power unit hardware properties / PU HW property

1.3.5 Encoder data sets (EDS)

Product: SINAMICS G120 CU240, Version: 4502400, Language: eng, Type: EDS

- p0422[0...n] Absolute encoder linear measuring step resolution / Enc abs meas step
1.4 BICO parameters (connectors/binectors)

1.4.1 Binector inputs (BI)

Product: SINAMICS G120 CU240, Version: 4502400, Language: eng, Type: BI

- **p0730 BI**: CU signal source for terminal DO 0 / CU S_src DO 0
- **p0731 BI**: CU signal source for terminal DO 1 / CU S_src DO 1
- **p0732 BI**: CU signal source for terminal DO 2 / CU S_src DO 2
- **p0782[0...1] BI**: CU analog outputs invert signal source / CU AO inv S_src
- **p0806 BI**: Inhibit master control / PcCtrl inhibit
- **p0810 BI**: Command data set selection CDS bit 0 / CDS select., bit 0
- **p0811 BI**: Command data set selection CDS bit 1 / CDS select., bit 1
- **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
- **p0897 BI**: Parking axis selection / Parking axis sel
- **p1020[0...n] BI**: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0
- **p1021[0...n] BI**: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1
- **p1022[0...n] BI**: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2
- **p1023[0...n] BI**: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3
- **p1035[0...n] BI**: Motorized potentiometer setpoint raise / Mop raise
- **p1036[0...n] BI**: Motorized potentiometer lower setpoint / Mop lower
- **p1039[0...n] BI**: Motorized potentiometer inversion / MotP inv
- **p1041[0...n] BI**: Motorized potentiometer manual/automatic / Mop manual/auto
- **p1043[0...n] BI**: Motorized potentiometer accept setting value / MotP acc set val
- **p1055[0...n] BI**: Jog bit 0 / Jog bit 0
- **p1056[0...n] BI**: Jog bit 1 / Jog bit 1
- **p1108[0...n] BI**: Total setpoint selection / Total setp sel
- **p1110[0...n] BI**: Inhibit negative direction / Inhib neg dir
- **p1111[0...n] BI**: Inhibit positive direction / Inhib pos dir
- **p1113[0...n] BI**: Setpoint inversion / Setp inv
- **p1122[0...n] BI**: Bypass ramp-function generator / Bypass RFG
- **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
- **p1143[0...n] BI**: Ramp-function generator, accept setting value / RFG accept set v
- **p120[0...n] BI**: Fying restart enable signal source / Fly_res enab S_src
- **p1230[0...n] BI**: DC braking activation / DC brake act
- **p1476[0...n] BI**: Speed controller hold integrator / n_ctrl integ stop
- **p1477[0...n] BI**: Speed controller set integrator value / n_ctrl integ set
- **p1492[0...n] BI**: Droop feedback enable / Droop enable
- **p1501[0...n] BI**: Change over between closed-loop speed/torque control / Changeov n/M_ctrl
Parameters

BICO parameters (connectors/binectors)

- **p2080[0...15]**: BI: Binector-connector converter status word 1 / Bin/con ZSW1
- **p2081[0...15]**: BI: Binector-connector converter status word 2 / Bin/con ZSW2
- **p2082[0...15]**: BI: Binector-connector converter status word 3 / Bin/con ZSW3
- **p2083[0...15]**: BI: Binector-connector converter status word 4 / Bin/con ZSW4
- **p2084[0...15]**: BI: Binector-connector converter status word 5 / Bin/con ZSW5
- **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
- **p2144[0...n]**: BI: Motor stall monitoring enable (negated) / Mot stall enab neg
- **p2148[0...n]**: BI: RFG active / RFG active
- **p2200[0...n]**: BI: Technology controller enable / Tec_ctrl enable
- **p2220[0...n]**: BI: Technology controller fixed value selection bit 0 / Tec_ctrl sel bit 0
- **p2222[0...n]**: BI: Technology controller fixed value selection bit 1 / Tec_ctrl sel bit 1
- **p2223[0...n]**: BI: Technology controller fixed value selection bit 2 / Tec_ctrl sel bit 2
- **p2235[0...n]**: BI: Technology controller motorized potentiometer raise setpoint / Tec_ctrl mop raise
- **p2236[0...n]**: BI: Technology controller motorized potentiometer lower setpoint / Tec_ctrl mop lower
- **p2286[0...n]**: BI: Hold technology controller integrator / Tec_ctr integ stop
- **p3111[0...n]**: BI: External fault 3, enable / Ext fault 3 enab
- **p3112[0...n]**: BI: External fault 3 enable negated / Extflt 3 enab neg
- **p3232[0...n]**: BI: Load monitoring failure detection / Load_mon fail_det
- **p3330[0...n]**: BI: 2/3 wire control command 1 / 2/3 wire cmd 1
- **p3331[0...n]**: BI: 2/3 wire control command 2 / 2/3 wire cmd 2
- **p3332[0...n]**: BI: 2/3 wire control command 3 / 2/3 wire cmd 3
- **p5614**: BI: Pe set switch-on inhibit signal source / Pe sw on_inh s_src
- **p9705**: BI: SI Motion: Test stop signal source / SI Mtn test stop
- **p20030[0...3]**: BI: AND 0 inputs / AND 0 inputs
- **p20034[0...3]**: BI: AND 1 inputs / AND 1 inputs
- **p20038[0...3]**: BI: AND 2 inputs / AND 2 inputs
- **p20042[0...3]**: BI: AND 3 inputs / AND 3 inputs
- **p20046[0...3]**: BI: OR 0 inputs / OR 0 inputs
- **p20050[0...3]**: BI: OR 1 inputs / OR 1 inputs
- **p20054[0...3]**: BI: OR 2 inputs / OR 2 inputs
- **p20058[0...3]**: BI: OR 3 inputs / OR 3 inputs
- **p20062[0...3]**: BI: XOR 0 inputs / XOR 0 inputs
- **p20066[0...3]**: BI: XOR 1 inputs / XOR 1 inputs
- **p20070[0...3]**: BI: XOR 2 inputs / XOR 2 inputs
- **p20074[0...3]**: BI: XOR 3 inputs / XOR 3 inputs
- **p20078**: BI: NOT 0 input I / NOT 0 input I
- **p20082**: BI: NOT 1 input I / NOT 1 input I
- **p20086**: BI: NOT 2 input I / NOT 2 input I
- **p20090**: BI: NOT 3 input I / NOT 3 input I
- **p20138**: BI: MFP 0 input pulse I / MFP 0 inp_pulse I
- **p20143**: BI: MFP 1 input pulse I / MFP 1 inp_pulse I
- **p20148**: BI: PCL 0 input pulse I / PCL 0 inp_pulse I
- **p20153**: BI: PCL 1 input pulse I / PCL 1 inp_pulse I
- **p20158**: BI: PDE 0 input pulse I / PDE 0 inp_pulse I
BICO parameters (connectors/binectors)

p20163  BI: PDE 1 input pulse I / PDE 1 inp_pulse I
p20168  BI: PDF 0 input pulse I / PDF 0 inp_pulse I
p20173  BI: PDF 1 input pulse I / PDF 1 inp_pulse I
p20178[0...1] BI: PST 0 inputs / PST 0 inputs
p20183[0...1] BI: PST 1 inputs / PST 1 inputs
p20188[0...1] BI: RSR 0 inputs / RSR 0 inputs
p20193[0...1] BI: RSR 1 inputs / RSR 1 inputs
p20198[0...3] BI: DFR 0 inputs / DFR 0 inputs
p20203[0...3] BI: DFR 1 inputs / DFR 1 inputs
p20208[0...1] BI: BSW 0 inputs / BSW 0 inputs
p20209  BI: BSW 0 switch setting I / BSW 0 sw_setting
p20213[0...1] BI: BSW 1 inputs / BSW 1 inputs
p20214  BI: BSW 1 switch setting I / BSW 1 sw_setting
p20219  BI: NSW 0 switch setting I / NSW 0 sw_setting
p20224  BI: NSW 1 switch setting I / NSW 1 sw_setting
p20245  BI: PT1 0 accept setting value S / PT1 0 acc set val
p20251  BI: PT1 1 accept setting value S / PT1 1 acc set val
p20260  BI: INT 0 accept setting value S / INT 0 acc set val
p20300  BI: NOT 4 input I / NOT 4 input I
p20304  BI: NOT 5 input I / NOT 5 input I
p20324[0...1] BI: RSR 2 inputs / RSR 2 inputs
p20329[0...3] BI: DFR 2 inputs / DFR 2 inputs
p20334  BI: PDE 2 input pulse I / PDE 2 inp_pulse I
p20339  BI: PDE 3 input pulse I / PDE 3 inp_pulse I
p20344  BI: PDF 2 input pulse I / PDF 2 inp_pulse I
p20349  BI: PDF 3 input pulse I / PDF 3 inp_pulse I
p20354  BI: MFP 2 input pulse I / MFP 2 inp_pulse I
p20359  BI: MFP 3 input pulse I / MFP 3 inp_pulse I
1.4.2 Connector inputs (CI)

Product: SINAMICS G120 CU240, Version: 4502400, Language: eng, Type: Cl

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0641[0...n]</td>
<td>CI: Current limit, variable / Cur lim var</td>
</tr>
<tr>
<td>p0771[0...1]</td>
<td>CI: CU analog outputs signal source / CU AO S_src</td>
</tr>
<tr>
<td>p1042[0...n]</td>
<td>CI: Motorized potentiometer automatic setpoint / Mop auto setpoint</td>
</tr>
<tr>
<td>p1044[0...n]</td>
<td>CI: Motorized potentiometer setting value / Mop set val</td>
</tr>
<tr>
<td>p1051[0...n]</td>
<td>CI: Speed limit RFG positive direction of rotation / n_limit RFG pos</td>
</tr>
<tr>
<td>p1052[0...n]</td>
<td>CI: Speed limit RFG negative direction of rotation / n_limit RFG neg</td>
</tr>
<tr>
<td>p1070[0...n]</td>
<td>CI: Main setpoint / Main setpoint</td>
</tr>
<tr>
<td>p1071[0...n]</td>
<td>CI: Main setpoint scaling / Main setp scal</td>
</tr>
<tr>
<td>p1075[0...n]</td>
<td>CI: Supplementary setpoint / Suppl setp</td>
</tr>
<tr>
<td>p1076[0...n]</td>
<td>CI: Supplementary setpoint scaling / Suppl setp scal</td>
</tr>
<tr>
<td>p1085[0...n]</td>
<td>CI: Speed limit in positive direction of rotation / n_limit pos</td>
</tr>
<tr>
<td>p1088[0...n]</td>
<td>CI: Speed limit in negative direction of rotation / n_limit neg</td>
</tr>
<tr>
<td>p1106[0...n]</td>
<td>CI: Minimum speed signal source / n_min s_src</td>
</tr>
<tr>
<td>p1109[0...n]</td>
<td>CI: Total setpoint / Total setp</td>
</tr>
<tr>
<td>p1138[0...n]</td>
<td>CI: Up ramp scaling / Up ramp scaling</td>
</tr>
<tr>
<td>p1139[0...n]</td>
<td>CI: Down ramp scaling / Down ramp scaling</td>
</tr>
<tr>
<td>p1144[0...n]</td>
<td>CI: Ramp-function generator setting value / RFG setting value</td>
</tr>
<tr>
<td>p1155[0...n]</td>
<td>CI: Speed controller speed setpoint 1 / n_ctrl n_set 1</td>
</tr>
<tr>
<td>p1160[0...n]</td>
<td>CI: Speed controller speed setpoint 2 / n_ctrl n_set 2</td>
</tr>
<tr>
<td>p1330[0...n]</td>
<td>CI: U/f control independent voltage setpoint / Uf U_set independ.</td>
</tr>
<tr>
<td>p1455[0...n]</td>
<td>CI: Speed controller P gain adaptation signal / n_ctr adapt_sig Kp</td>
</tr>
<tr>
<td>p1466[0...n]</td>
<td>CI: Speed controller P-gain scaling / n_ctrl Kp scal</td>
</tr>
<tr>
<td>p1475[0...n]</td>
<td>CI: Speed controller torque setting value for motor holding brake / n_ctrl M_sv MHB</td>
</tr>
<tr>
<td>p1478[0...n]</td>
<td>CI: Speed controller integrator setting value / n_ctr integ_setVal</td>
</tr>
<tr>
<td>p1479[0...n]</td>
<td>CI: Speed controller integrator setting value scaling / n_ctrl I_val scal</td>
</tr>
<tr>
<td>p1486[0...n]</td>
<td>CI: Droop compensation torque / Droop M_comp</td>
</tr>
<tr>
<td>p1503[0...n]</td>
<td>CI: Torque setpoint / M_set</td>
</tr>
<tr>
<td>p1511[0...n]</td>
<td>CI: Supplementary torque 1 / M_suppl 1</td>
</tr>
<tr>
<td>p1512[0...n]</td>
<td>CI: Supplementary torque 1 scaling / M_suppl 1 scal</td>
</tr>
<tr>
<td>p1513[0...n]</td>
<td>CI: Supplementary torque 2 / M_suppl 2</td>
</tr>
<tr>
<td>p1522[0...n]</td>
<td>CI: Torque limit upper / M_max upper</td>
</tr>
<tr>
<td>p1523[0...n]</td>
<td>CI: Torque limit lower / M_max lower</td>
</tr>
<tr>
<td>p1528[0...n]</td>
<td>CI: Torque limit upper scaling / M_max upper scal</td>
</tr>
<tr>
<td>p1529[0...n]</td>
<td>CI: Torque limit lower scaling / M_max lower scal</td>
</tr>
<tr>
<td>p1552[0...n]</td>
<td>CI: Torque limit upper scaling without offset / M_max up w/o offs</td>
</tr>
<tr>
<td>p1554[0...n]</td>
<td>CI: Torque limit lower scaling without offset / M_max low w/o offs</td>
</tr>
<tr>
<td>p2016[0...3]</td>
<td>CI: Comm IF USS PZD send word / Comm USS send word</td>
</tr>
<tr>
<td>p2051[0...11]</td>
<td>CI: PROFIdrive PZD send word / PZD send word</td>
</tr>
<tr>
<td>p2061[0...10]</td>
<td>CI: PROFIBUS PZD send double word / PZD send DW</td>
</tr>
<tr>
<td>p2099[0...1]</td>
<td>CI: Connector-binector converter signal source / Con/bin S_src</td>
</tr>
<tr>
<td>p2151[0...n]</td>
<td>CI: Speed setpoint for messages/signals / n_set for msg</td>
</tr>
<tr>
<td>p2253[0...n]</td>
<td>CI: Technology controller setpoint 1 / Tec_ctrl setp 1</td>
</tr>
<tr>
<td>p2254[0...n]</td>
<td>CI: Technology controller setpoint 2 / Tec_ctrl setp 2</td>
</tr>
<tr>
<td>p2264[0...n]</td>
<td>CI: Technology controller actual value / Tec_ctrl act val</td>
</tr>
<tr>
<td>p2289[0...n]</td>
<td>CI: Technology controller pre-control signal / Tec_ctrl prectrl</td>
</tr>
<tr>
<td>p2296[0...n]</td>
<td>CI: Technology controller output scaling / Tec_ctrl outp scal</td>
</tr>
<tr>
<td>p2297[0...n]</td>
<td>CI: Technology controller maximum limit signal source / Tec_ctrlMaxLimS_src</td>
</tr>
<tr>
<td>p2298[0...n]</td>
<td>CI: Technology controller minimum limit signal source / Tec_ctrl min_l s_s</td>
</tr>
<tr>
<td>p2299[0...n]</td>
<td>CI: Technology controller limit offset / Tech_ctrl lim offs</td>
</tr>
</tbody>
</table>
### BICO parameters (connectors/binectors)

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3230[0...n]</td>
<td>CI: Load monitoring, speed actual value / Load monitr n_act</td>
</tr>
<tr>
<td>p20094[0...3]</td>
<td>CI: ADD 0 inputs / ADD 0 inputs</td>
</tr>
<tr>
<td>p20098[0...3]</td>
<td>CI: ADD 1 inputs / ADD 1 inputs</td>
</tr>
<tr>
<td>p20102[0...1]</td>
<td>CI: SUB 0 inputs / SUB 0 inputs</td>
</tr>
<tr>
<td>p20106[0...1]</td>
<td>CI: SUB 1 inputs / SUB 1 inputs</td>
</tr>
<tr>
<td>p20110[0...3]</td>
<td>CI: MUL 0 inputs / MUL 0 inputs</td>
</tr>
<tr>
<td>p20114[0...3]</td>
<td>CI: MUL 1 inputs / MUL 1 inputs</td>
</tr>
<tr>
<td>p20118[0...1]</td>
<td>CI: DIV 0 inputs / DIV 0 inputs</td>
</tr>
<tr>
<td>p20123[0...1]</td>
<td>CI: DIV 1 inputs / DIV 1 inputs</td>
</tr>
<tr>
<td>p20128</td>
<td>CI: AVA 0 input X / AVA 0 input X</td>
</tr>
<tr>
<td>p20133</td>
<td>CI: AVA 1 input X / AVA 1 input X</td>
</tr>
<tr>
<td>p20218[0...1]</td>
<td>CI: NSW 0 inputs / NSW 0 inputs</td>
</tr>
<tr>
<td>p20223[0...1]</td>
<td>CI: NSW 1 inputs / NSW 1 inputs</td>
</tr>
<tr>
<td>p20228</td>
<td>CI: LIM 0 input X / LIM 0 input X</td>
</tr>
<tr>
<td>p20236</td>
<td>CI: LIM 1 input X / LIM 1 input X</td>
</tr>
<tr>
<td>p20244[0...1]</td>
<td>CI: PT1 0 inputs / PT1 0 inputs</td>
</tr>
<tr>
<td>p20250[0...1]</td>
<td>CI: PT1 1 inputs / PT1 1 inputs</td>
</tr>
<tr>
<td>p20256[0...1]</td>
<td>CI: INT 0 inputs / INT 0 inputs</td>
</tr>
<tr>
<td>p20266</td>
<td>CI: LVM 0 input X / LVM 0 input X</td>
</tr>
<tr>
<td>p20275</td>
<td>CI: LVM 1 input X / LVM 1 input X</td>
</tr>
<tr>
<td>p20284</td>
<td>CI: DIF 0 input X / DIF 0 input X</td>
</tr>
<tr>
<td>p20308[0...3]</td>
<td>CI: ADD 2 inputs / ADD 2 inputs</td>
</tr>
<tr>
<td>p20312[0...1]</td>
<td>CI: NCM 0 inputs / NCM 0 inputs</td>
</tr>
<tr>
<td>p20318[0...1]</td>
<td>CI: NCM 1 inputs / NCM 1 inputs</td>
</tr>
<tr>
<td>p20372</td>
<td>CI: PLI 0 input X / PLI 0 input X</td>
</tr>
<tr>
<td>p20378</td>
<td>CI: PLI 1 input X / PLI 1 input X</td>
</tr>
</tbody>
</table>
1.4.3 Binector outputs (BO)

Product: SINAMICS G120 CU240, Version: 4502400, Language: eng, Type: BO

- r0751.0...9 BO: CU analog inputs status word / CU AI status word
- r0785.0...1 BO: CU analog outputs status word / CU AO ZSW
- r0807.0 BO: Master control active / PcCtrl active
- r1025.0 BO: Fixed speed setpoint status / n_setp_fix status
- r2043.0...2 BO: PROFIdrive PZD state / PD PZD state
- r2090.0...15 BO: PROFIdrive PZD1 receive bit-serial / PZD1 recv bitw
- r2091.0...15 BO: PROFIdrive PZD2 receive bit-serial / PZD2 recv bitw
- r2092.0...15 BO: PROFIdrive PZD3 receive bit-serial / PZD3 recv bitw
- r2093.0...15 BO: PROFIdrive PZD4 receive bit-serial / PZD4 recv bitw
- r2094.0...15 BO: Connector-binector converter binector output / Con/bin outp
- r2095.0...15 BO: Connector-binector converter binector output / Con/bin outp
- r9935.0 BO: POWER ON delay signal / POWER ON t_delay
- r20031 BO: AND 0 output Q / AND 0 output Q
- r20035 BO: AND 1 output Q / AND 1 output Q
- r20039 BO: AND 2 output Q / AND 2 output Q
- r20043 BO: AND 3 output Q / AND 3 output Q
- r20047 BO: OR 0 output Q / OR 0 output Q
- r20051 BO: OR 1 output Q / OR 1 output Q
- r20055 BO: OR 2 output Q / OR 2 output Q
- r20059 BO: OR 3 output Q / OR 3 output Q
- r20063 BO: XOR 0 output Q / XOR 0 output Q
- r20067 BO: XOR 1 output Q / XOR 1 output Q
- r20071 BO: XOR 2 output Q / XOR 2 output Q
- r20075 BO: XOR 3 output Q / XOR 3 output Q
- r20079 BO: NOT 0 inverted output / NOT 0 inv output
- r20083 BO: NOT 1 inverted output / NOT 1 inv output
- r20087 BO: NOT 2 inverted output / NOT 2 inv output
- r20091 BO: NOT 3 inverted output / NOT 3 inv output
- r20120 BO: DIV 0 divisor is zero QF / DIV 0 divisor=0 QF
- r20125 BO: DIV 1 divisor is zero QF / DIV 1 divisor=0 QF
- r20130 BO: AVA 0 input negative SN / AVA 0 input neg SN
- r20135 BO: AVA 1 input negative SN / AVA 1 input neg SN
- r20140 BO: MFP 0 output Q / MFP 0 output Q
- r20145 BO: MFP 1 output Q / MFP 1 output Q
- r20150 BO: PCL 0 output Q / PCL 0 output Q
- r20155 BO: PCL 1 output Q / PCL 1 output Q
- r20160 BO: PDE 0 output Q / PDE 0 output Q
- r20165 BO: PDE 1 output Q / PDE 1 output Q
- r20170 BO: PDF 0 output Q / PDF 0 output Q
- r20175 BO: PDF 1 output Q / PDF 1 output Q
- r20180 BO: PST 0 output Q / PST 0 output Q
- r20185 BO: PST 1 output Q / PST 1 output Q
- r20189 BO: RSR 0 output Q / RSR 0 output Q
- r20190 BO: RSR 0 inverted output QN / RSR 0 inv outp QN
- r20194 BO: RSR 1 output Q / RSR 1 output Q
- r20195 BO: RSR 1 inverted output QN / RSR 1 inv outp QN
- r20199 BO: DFR 0 output Q / DFR 0 output Q
- r20200 BO: DFR 0 inverted output QN / DFR 0 inv outp QN
- r20204 BO: DFR 1 output Q / DFR 1 output Q
- r20205 BO: DFR 1 inverted output QN / DFR 1 inv outp QN
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r20210</td>
<td>BO: BSW 0 output Q / BSW 0 output Q</td>
</tr>
<tr>
<td>r20215</td>
<td>BO: BSW 1 output Q / BSW 1 output Q</td>
</tr>
<tr>
<td>r20232</td>
<td>BO: LIM 0 input quantity at the upper limit QU / LIM 0 QU</td>
</tr>
<tr>
<td>r20233</td>
<td>BO: LIM 0 input quantity at the lower limit QL / LIM 0 QL</td>
</tr>
<tr>
<td>r20240</td>
<td>BO: LIM 1 input quantity at the upper limit QU / LIM 1 QU</td>
</tr>
<tr>
<td>r20241</td>
<td>BO: LIM 1 input quantity at the lower limit QL / LIM 1 QL</td>
</tr>
<tr>
<td>r20262</td>
<td>BO: INT 0 integrator at the upper limit QU / INT 0 QU</td>
</tr>
<tr>
<td>r20263</td>
<td>BO: INT 0 integrator at the lower limit QL / INT 0 QL</td>
</tr>
<tr>
<td>r20270</td>
<td>BO: LVM 0 input quantity above interval QU / LVM 0 X above QU</td>
</tr>
<tr>
<td>r20271</td>
<td>BO: LVM 0 input quantity within interval QM / LVM 0 X within QM</td>
</tr>
<tr>
<td>r20272</td>
<td>BO: LVM 0 input quantity below interval QL / LVM 0 X below QL</td>
</tr>
<tr>
<td>r20279</td>
<td>BO: LVM 1 input quantity above interval QU / LVM 1 X above QU</td>
</tr>
<tr>
<td>r20280</td>
<td>BO: LVM 1 input quantity within interval QM / LVM 1 X within QM</td>
</tr>
<tr>
<td>r20281</td>
<td>BO: LVM 1 input quantity below interval QL / LVM 1 X below QL</td>
</tr>
<tr>
<td>r20301</td>
<td>BO: NOT 4 inverted output / NOT 4 inv output</td>
</tr>
<tr>
<td>r20305</td>
<td>BO: NOT 5 inverted output / NOT 5 inv output</td>
</tr>
<tr>
<td>r20313</td>
<td>BO: NCM 0 output QU / NCM 0 output QU</td>
</tr>
<tr>
<td>r20314</td>
<td>BO: NCM 0 output QE / NCM 0 output QE</td>
</tr>
<tr>
<td>r20315</td>
<td>BO: NCM 0 output QL / NCM 0 output QL</td>
</tr>
<tr>
<td>r20319</td>
<td>BO: NCM 1 output QU / NCM 1 output QU</td>
</tr>
<tr>
<td>r20320</td>
<td>BO: NCM 1 output QE / NCM 1 output QE</td>
</tr>
<tr>
<td>r20321</td>
<td>BO: NCM 1 output QL / NCM 1 output QL</td>
</tr>
<tr>
<td>r20325</td>
<td>BO: RSR 2 output Q / RSR 2 output Q</td>
</tr>
<tr>
<td>r20326</td>
<td>BO: RSR 2 inverted output QN / RSR 2 inv outp QN</td>
</tr>
<tr>
<td>r20330</td>
<td>BO: DFR 2 output Q / DFR 2 output Q</td>
</tr>
<tr>
<td>r20331</td>
<td>BO: DFR 2 inverted output QN / DFR 2 inv outp QN</td>
</tr>
<tr>
<td>r20336</td>
<td>BO: PDE 2 output Q / PDE 2 output Q</td>
</tr>
<tr>
<td>r20341</td>
<td>BO: PDE 3 output Q / PDE 3 output Q</td>
</tr>
<tr>
<td>r20346</td>
<td>BO: PDF 2 output Q / PDF 2 output Q</td>
</tr>
<tr>
<td>r20351</td>
<td>BO: PDF 3 output Q / PDF 3 output Q</td>
</tr>
<tr>
<td>r20356</td>
<td>BO: MFP 2 output Q / MFP 2 output Q</td>
</tr>
<tr>
<td>r20361</td>
<td>BO: MFP 3 output Q / MFP 3 output Q</td>
</tr>
</tbody>
</table>
1.4.4 Connector outputs (CO)

Product: SINAMICS G120 CU240, Version: 4502400, Language: eng, Type: CO

- r0021 CO: Actual speed smoothed / n_act smooth
- r0025 CO: Output voltage smoothed / U_outp smooth
- r0026 CO: DC link voltage smoothed / Vdc smooth
- r0027 CO: Absolute actual current smoothed / I_act abs val smth
- r0032 CO: Active power actual value smoothed / P_actv_act smth
- r0034 CO: Motor utilization / Motor utilization
- r0035 CO: Motor temperature / Mot temp
- r0036 CO: Power unit overload l2t / PU overload l2t
- r0037[0...19] CO: Power unit temperatures / PU temperatures
- r0060 CO: Speed setpoint before the setpoint filter / n_set before filt.
- r0062 CO: Speed setpoint after the filter / n_set after filter
- r0063[0...1] CO: Absolute current actual value / I_act
- r0064 CO: Speed controller system deviation / n_ctrl system dev
- r0066 CO: Output frequency / f_outp
- r0067 CO: Output current, maximum / I_outp max
- r0068[0...1] CO: Absolute current actual value / I_act abs val
- r0069[0...6] CO: Phase current actual value / I_phase act value
- r0070 CO: Actual DC link voltage / Vdc act val
- r0072 CO: Output voltage / U_output
- r0074 CO: Modulat_depth / Modulat_depth
- r0075 CO: Current setpoint field-generating / Id_set
- r0076 CO: Current actual value field-generating / Id_act
- r0077 CO: Current setpoint torque-generating / Iq_set
- r0078 CO: Current actual value torque-generating / Iq_act
- r0079 CO: Torque setpoint / M_set total
- r0080[0...1] CO: Torque actual value / M_act
- r0081 CO: Torque utilization / M_Utilization
- r0082[0...2] CO: Active power actual value / P_act
- r0083 CO: Flux setpoint / Flux setp
- r0084[0...1] CO: Flux actual value / Flux act val
- r0087 CO: Actual power factor / Cos phi act
- r0094 CO: Transformation angle / Transformat_angle
- r0289 CO: Maximum power unit output current / PU I_outp max
- r0566 CO: Measuring probe, speed actual value / MT n_act
- r0587 CO: Measuring probe, measuring time measured / MT t_meas measured
- r0588 CO: Measuring probe, pulse counter / MT pulse counter
- r0752[0...1] CO: CU analog inputs input voltage/current actual / CU AI U/I_inp act
- r0755[0...1] CO: CU analog inputs actual value in percent / CU AI value in %
- r0944 CO: Counter for fault buffer changes / Fault buff change
- p1001[0...n] CO: Fixed speed setpoint 1 / n_set_fixed 1
- p1002[0...n] CO: Fixed speed setpoint 2 / n_set_fixed 2
- p1003[0...n] CO: Fixed speed setpoint 3 / n_set_fixed 3
- p1004[0...n] CO: Fixed speed setpoint 4 / n_set_fixed 4
- p1005[0...n] CO: Fixed speed setpoint 5 / n_set_fixed 5
- p1006[0...n] CO: Fixed speed setpoint 6 / n_set_fixed 6
- p1007[0...n] CO: Fixed speed setpoint 7 / n_set_fixed 7
- p1008[0...n] CO: Fixed speed setpoint 8 / n_set_fixed 8
- p1009[0...n] CO: Fixed speed setpoint 9 / n_set_fixed 9
- p1010[0...n] CO: Fixed speed setpoint 10 / n_set_fixed 10
- p1011[0...n] CO: Fixed speed setpoint 11 / n_set_fixed 11
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1012[0...n]</td>
<td>CO: Fixed speed setpoint 12 / n_set_fixed 12</td>
</tr>
<tr>
<td>p1013[0...n]</td>
<td>CO: Fixed speed setpoint 13 / n_set_fixed 13</td>
</tr>
<tr>
<td>p1014[0...n]</td>
<td>CO: Fixed speed setpoint 14 / n_set_fixed 14</td>
</tr>
<tr>
<td>p1015[0...n]</td>
<td>CO: Fixed speed setpoint 15 / n_set_fixed 15</td>
</tr>
<tr>
<td>r1024</td>
<td>CO: Fixed speed setpoint effective / n_set_fixed eff</td>
</tr>
<tr>
<td>r1045</td>
<td>CO: Mot. potentiometer speed setp. in front of ramp-fct. gen. / Mop n_set bef RFG</td>
</tr>
<tr>
<td>r1050</td>
<td>CO: Motor. potentiometer setpoint after the ramp-function generator / Mop setp after RFG</td>
</tr>
<tr>
<td>r1073</td>
<td>CO: Main setpoint effective / Main setpoint eff</td>
</tr>
<tr>
<td>r1077</td>
<td>CO: Supplementary setpoint effective / Suppl setpoint eff</td>
</tr>
<tr>
<td>r1078</td>
<td>CO: Total setpoint effective / Total setpoint eff</td>
</tr>
<tr>
<td>p1083[0...n]</td>
<td>CO: Speed limit in positive direction of rotation / n_limit pos</td>
</tr>
<tr>
<td>r1084</td>
<td>CO: Speed limit positive effective / n_limit pos eff</td>
</tr>
<tr>
<td>p1086[0...n]</td>
<td>CO: Speed limit in negative direction of rotation / n_limit neg</td>
</tr>
<tr>
<td>r1087</td>
<td>CO: Speed limit negative effective / n_limit neg eff</td>
</tr>
<tr>
<td>r1112</td>
<td>CO: Speed setpoint after minimum limiting / n_set aft min_lim</td>
</tr>
<tr>
<td>r1114</td>
<td>CO: Setpoint after the direction limiting / Setp after limit</td>
</tr>
<tr>
<td>r1119</td>
<td>CO: Ramp-function generator setpoint at the input / RFG setp at inp</td>
</tr>
<tr>
<td>r1149</td>
<td>CO: Ramp-function generator, acceleration / RFG acceleration</td>
</tr>
<tr>
<td>r1150</td>
<td>CO: Ramp-function generator speed setpoint at the output / RFG n_set at outp</td>
</tr>
<tr>
<td>r1169</td>
<td>CO: Speed controller, speed setpoints 1 and 2 / n_ctl n_set 1/2</td>
</tr>
<tr>
<td>r1170</td>
<td>CO: Speed controller, setpoint sum / n_ctl setp sum</td>
</tr>
<tr>
<td>r1258</td>
<td>CO: Vdc controller output / Vdc_ctrl output</td>
</tr>
<tr>
<td>r1298</td>
<td>CO: Vdc controller output (U/f) / Vdc_ctrl output</td>
</tr>
<tr>
<td>r1337</td>
<td>CO: Actual slip compensation / Slip comp act val</td>
</tr>
<tr>
<td>r1343</td>
<td>CO: I_max controller frequency output / I_max_ctrl f_outp</td>
</tr>
<tr>
<td>r1348</td>
<td>CO: U/f control Eco factor actual value / U/f Eco fac act v</td>
</tr>
<tr>
<td>r1351[0...n]</td>
<td>CO: Motor holding brake starting frequency / Brake f_start</td>
</tr>
<tr>
<td>r1438</td>
<td>CO: Speed controller, speed setpoint / n_ctl n_set</td>
</tr>
<tr>
<td>r1445</td>
<td>CO: Actual speed smoothed / n_act smooth</td>
</tr>
<tr>
<td>r1454</td>
<td>CO: Speed controller system deviation I component / n_ctr sys dev Tn</td>
</tr>
<tr>
<td>r1468</td>
<td>CO: Speed controller P-gain effective / n_ctr Kp eff</td>
</tr>
<tr>
<td>r1482</td>
<td>CO: Speed controller I torque output / n_ctl I-M_output</td>
</tr>
<tr>
<td>r1490</td>
<td>CO: Droop feedback speed reduction / Droop n_reduction</td>
</tr>
<tr>
<td>r1493</td>
<td>CO: Moment of inertia, total / M_inertia total</td>
</tr>
<tr>
<td>r1508</td>
<td>CO: Torque setpoint before supplementary torque / M_set bef. M_suppl</td>
</tr>
<tr>
<td>r1516</td>
<td>CO: Supplementary torque and acceleration torque / M_suppl + M_accel</td>
</tr>
<tr>
<td>r1518[0...1]</td>
<td>CO: Accelerating torque / M_accel</td>
</tr>
<tr>
<td>p1520[0...n]</td>
<td>CO: Torque limit upper / M_max upper</td>
</tr>
<tr>
<td>p1521[0...n]</td>
<td>CO: Torque limit lower / M_max lower</td>
</tr>
<tr>
<td>p1524[0...n]</td>
<td>CO: Torque limit upper/motoring scaling / M_max up/mot scal</td>
</tr>
<tr>
<td>p1525[0...n]</td>
<td>CO: Torque limit lower scaling / M_max lower scal</td>
</tr>
<tr>
<td>r1526</td>
<td>CO: Torque limit upper without offset / M_max up w/o offs</td>
</tr>
<tr>
<td>r1527</td>
<td>CO: Torque limit lower without offset / M_max low w/o offs</td>
</tr>
<tr>
<td>r1538</td>
<td>CO: Upper effective torque limit / M_max upper eff</td>
</tr>
<tr>
<td>r1539</td>
<td>CO: Lower effective torque limit / M_max lower eff</td>
</tr>
<tr>
<td>r1547[0...1]</td>
<td>CO: Torque limit for speed controller output / M_max outp n_ctl</td>
</tr>
<tr>
<td>r1548[0...1]</td>
<td>CO: Stall current limit torque-generating maximum / Isq_max stall</td>
</tr>
<tr>
<td>p1570[0...n]</td>
<td>CO: Flux setpoint / Flux setpoint</td>
</tr>
<tr>
<td>r1593[0...1]</td>
<td>CO: Field weakening controller / flux controller output / Field/Fi_ctrl outp</td>
</tr>
<tr>
<td>r1597</td>
<td>CO: Field weakening controller output / Field_ctrl outp</td>
</tr>
<tr>
<td>r1598</td>
<td>CO: Total flux setpoint / Flux setp total</td>
</tr>
<tr>
<td>r1718</td>
<td>CO: Isq controller output / Isq_ctrl outp</td>
</tr>
<tr>
<td>r1723</td>
<td>CO: Isd controller output / Isd_ctrl outp</td>
</tr>
</tbody>
</table>
Parameters

BICO parameters (connectors/binectors)

- r1732[0...1]: CO: Direct-axis voltage setpoint / Direct U set
- r1733[0...1]: CO: Quadrature-axis voltage setpoint / Quad U set
- r1770: CO: Motor model speed adaptation proportional component / MotMod n_adapt Kp
- r1771: CO: Motor model speed adaptation I comp. / MotMod n_adapt Tn
- r1801[0...1]: CO: Pulse frequency / Pulse frequency
- r1809: CO: Modulator mode actual / Modulator mode act
- r2050[0...11]: CO: PROFIBUS PZD receive word / PZD recv word
- r2060[0...10]: CO: PROFIdrive PZD receive double word / PZD recv DW
- r2089[0...4]: CO: Send binector-connector converter status word / Bin/con ZSW send
- r2120: CO: Sum of fault and alarm buffer changes / Sum buffer changed
- r2121: CO: Counter, alarm buffer changes / Alrm buff changed
- r2131: CO: Actual fault code / Actual fault code
- r2132: CO: Actual alarm code / Actual alarm code
- r2169: CO: Actual speed smoothed signals / n_act smth message
- p2201[0...n]: CO: Technology controller, fixed value 1 / Tec_ctrl fix val1
- p2202[0...n]: CO: Technology controller, fixed value 2 / Tec_ctr fix val 2
- p2203[0...n]: CO: Technology controller, fixed value 3 / Tec_ctr fix val 3
- p2204[0...n]: CO: Technology controller, fixed value 4 / Tec_ctr fix val 4
- p2205[0...n]: CO: Technology controller, fixed value 5 / Tec_ctr fix val 5
- p2206[0...n]: CO: Technology controller, fixed value 6 / Tec_ctr fix val 6
- p2207[0...n]: CO: Technology controller, fixed value 7 / Tec_ctr fix val 7
- p2208[0...n]: CO: Technology controller, fixed value 8 / Tec_ctr fix val 8
- p2209[0...n]: CO: Technology controller, fixed value 9 / Tec_ctr fix val 9
- p2210[0...n]: CO: Technology controller, fixed value 10 / Tec_ctr fix val 10
- p2211[0...n]: CO: Technology controller, fixed value 11 / Tec_ctr fix val 11
- p2212[0...n]: CO: Technology controller, fixed value 12 / Tec_ctr fix val 12
- p2213[0...n]: CO: Technology controller, fixed value 13 / Tec_ctr fix val 13
- p2214[0...n]: CO: Technology controller, fixed value 14 / Tec_ctr fix val 14
- p2215[0...n]: CO: Technology controller, fixed value 15 / Tec_ctr fix val 15
- r2224: CO: Technology controller, fixed value effective / Tec_ctr FixVal eff
- r2245: CO: Technology controller mot. potentiometer setpoint before RFG / Tec_ctr mop beRFG
- r2250: CO: Technology controller motorized potentiometer setpoint after RFG / Tec_ctr mop aftRFG
- r2260: CO: Technology controller setpoint after ramp-function generator / Tec_ctr set aftRFG
- r2262: CO: Technology controller setpoint after filter / Tec_ctr set aftFilt
- r2266: CO: Technology controller actual value after filter / Tec_ctr act aftFilt
- r2272: CO: Technology controller actual value scaled / Tech_ctrl act scal
- r2273: CO: Technology controller error / Tec_ctrl error
- p2291: CO: Technology controller maximum limiting / Tec_ctrl max_limit
- p2292: CO: Technology controller minimum limiting / Tec_ctrl min_limit
- r2294: CO: Technology controller output signal / Tec_ctrl outp_sig
- p2295: CO: Technology controller output scaling / Tec_ctrl outp scal
- r2344: CO: Technology controller last speed setpoint (smoothed) / Tec_ctrl n_setp_sm
- p2900[0...n]: CO: Fixed value 1 [%] / Fixed value 1 [%]
- p2901[0...n]: CO: Fixed value 2 [%] / Fixed value 2 [%]
- p2902[0...14]: CO: Fixed values [%] / Fixed values [%]
- p2930[0...n]: CO: Fixed value M [Nm] / Fixed value M [Nm]
- r3131: CO: Actual flt value / Actual flt value
- r3132: CO: Actual component number / Act comp_no.
- r9712: CO: SI Motion diagnostics pos. act. val. motor side (processor 1) / SI Mtn s_act motP1
- r9713[0...4]: CO: SI Motion diagnostics position actual value load side / SI Mtn s_act load
- r9714[0...2]: CO: SI Motion diagnostics velocity (processor 1) / SI Mtn diag v P1
- r9733[0...2]: CO: SI Motion setpoint speed limit effective / SI Mtn setp_lim
- r20095: CO: ADD 0 output Y / ADD 0 output Y
### BICO parameters (connectors/binectors)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r20099</td>
<td>CO: ADD 1 output Y / ADD 1 output Y</td>
</tr>
<tr>
<td>r20103</td>
<td>CO: SUB 0 difference Y / SUB 0 difference Y</td>
</tr>
<tr>
<td>r20107</td>
<td>CO: SUB 1 difference Y / SUB 1 difference Y</td>
</tr>
<tr>
<td>r20111</td>
<td>CO: MUL 0 product Y / MUL 0 product Y</td>
</tr>
<tr>
<td>r20115</td>
<td>CO: MUL 1 product Y / MUL 1 product Y</td>
</tr>
<tr>
<td>r20119[0...2]</td>
<td>CO: DIV 0 quotient / DIV 0 quotient</td>
</tr>
<tr>
<td>r20124[0...2]</td>
<td>CO: DIV 1 quotient / DIV 1 quotient</td>
</tr>
<tr>
<td>r20129</td>
<td>CO: AVA 0 output Y / AVA 0 output Y</td>
</tr>
<tr>
<td>r20134</td>
<td>CO: AVA 1 output Y / AVA 1 output Y</td>
</tr>
<tr>
<td>r20220</td>
<td>CO: NSW 0 output Y / NSW 0 output Y</td>
</tr>
<tr>
<td>r20225</td>
<td>CO: NSW 1 output Y / NSW 1 output Y</td>
</tr>
<tr>
<td>r20231</td>
<td>CO: LIM 0 output Y / LIM 0 output Y</td>
</tr>
<tr>
<td>r20239</td>
<td>CO: LIM 1 output Y / LIM 1 output Y</td>
</tr>
<tr>
<td>r20247</td>
<td>CO: PT1 0 output Y / PT1 0 output Y</td>
</tr>
<tr>
<td>r20253</td>
<td>CO: PT1 1 output Y / PT1 1 output Y</td>
</tr>
<tr>
<td>r20261</td>
<td>CO: INT 0 output Y / INT 0 output Y</td>
</tr>
<tr>
<td>r20286</td>
<td>CO: DIF 0 output Y / DIF 0 output Y</td>
</tr>
<tr>
<td>r20309</td>
<td>CO: ADD 2 output Y / ADD 2 output Y</td>
</tr>
<tr>
<td>r20373</td>
<td>CO: PLI 0 output Y / PLI 0 output Y</td>
</tr>
<tr>
<td>r20379</td>
<td>CO: PLI 1 output Y / PLI 1 output Y</td>
</tr>
</tbody>
</table>
1.4.5 Connector/binector outputs (CO/BO)

Product: SINAMICS G120 CU240, Version: 4502400, Language: eng, Type: CO/BO

- **r0046.0...31** CO/BO: Missing enable sig / Missing enable sig
- **r0050.0...1** CO/BO: Command Data Set CDS effective / CDS effective
- **r0051.0...1** CO/BO: Drive Data Set DDS effective / DDS effective
- **r0052.0...15** CO/BO: Status word 1 / ZSW 1
- **r0053.0...11** CO/BO: Status word 2 / ZSW 2
- **r0054.0...15** CO/BO: Control word 1 / STW 1
- **r0055.0...15** CO/BO: Supplementary control word / Suppl STW
- **r0056.0...15** CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl
- **r0056.0...13** CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl
- **r0722.0...11** CO/BO: CU digital inputs, status / CU DI status
- **r0722.0...12** CO/BO: CU digital inputs, status / CU DI status
- **r0723.0...11** CO/BO: CU digital inputs, status inverted / CU DI status inv
- **r0723.0...12** CO/BO: CU digital inputs, status inverted / CU DI status inv
- **r0835.2...8** CO/BO: Data set changeover status word / DDS_ZSW
- **r0836.0...1** CO/BO: Command Data Set CDS selected / CDS selected
- **r0837.0...1** CO/BO: Drive Data Set DDS selected / DDS selected
- **r0898.0...14** CO/BO: Control word sequence control / STW seq_ctrl
- **r0899.0...13** CO/BO: Status word sequence control / ZSW seq_ctrl
- **r1198.0...15** CO/BO: Control word setpoint channel / STW setpoint chan
- **r1199.0...8** CO/BO: Ramp-function generator status word / RFG ZSW
- **r1204.0...13** CO/BO: Flying restart, U/f control status / FlyRest Uf st
- **r1205.0...15** CO/BO: Flying restart, vector control status / FlyRest vector st
- **r1214.0...15** CO/BO: Automatic restart, status / AR status
- **r1239.8...13** CO/BO: DC braking status word / DCBRK ZSW
- **r1406.4...15** CO/BO: Control word speed controller / STW n_ctrl
- **r1407.0...17** CO/BO: Status word speed controller / ZSW n_ctrl
- **r1408.0...14** CO/BO: Status word current controller / ZSW I_ctrl
- **r1229.0...15** CO/BO: Trigger word for faults and alarms / Trigger word
- **r1235.12...15** CO/BO: Status word faults/alarms 2 / ZSW fault/alarm 2
- **r1238.7...15** CO/BO: Control word faults/alarms / STW fault/alarm
- **r1239.0...12** CO/BO: Status word faults/alarms 1 / ZSW fault/alarm 1
- **r1297.0...13** CO/BO: Status word monitoring 1 / ZSW monitor 1
- **r1298.0...13** CO/BO: Status word monitoring 2 / ZSW monitor 2
- **r1299.0...11** CO/BO: Status word monitoring 3 / ZSW monitor 3
- **r2225.0** CO/BO: Technology controller fixed value selection status word / Tec_ctr FixVal ZSW
- **r2349.0...12** CO/BO: Technology controller status word / Tec_ctr status
- **r3113.0...15** CO/BO: NAMUR message bit bar / NAMUR bit bar
- **r3333.0...3** CO/BO: 2/3 wire control control word / 2/3 wire STW
- **r3859.0** CO/BO: Compound braking status word / Compound Br ZSW
- **r5613.0...1** CO/BO: Pe energy-saving active/inactive / Pe save act/inact
- **r9720.0...13** CO/BO: SI Motion control signals integrated in the drive / SI Mtn integ STW
- **r9722.0...15** CO/BO: SI Motion status signals integrated in the drive / SI Mtn integ stat
- **r9722.0...13** CO/BO: SI Motion status signals integrated in the drive / SI Mtn integ stat
- **r9723.0...16** CO/BO: SI Motion diagnostic signals integrated in the drive / SI Mtn integ diag
- **r9734.0...14** CO/BO: SI Motion Safety Info Channel status word / SI Mtn info ch ZSW
- **r9742.0...15** CO/BO: SI Motion drive-integrated status signals (processor 2) / SI Mtn int stat P2
- **r9772.0...20** CO/BO: SI status (processor 1) / SI status P1
- **r9773.0...31** CO/BO: SI status (processor 1 + processor 2) / SI status P1+P2
- **r9872.0...20** CO/BO: SI status (processor 2) / SI Status P2
Parameters

**BICO parameters (connectors/binectors)**

- r10051.0...2  CO/BO: SI digital inputs status (processor 1) / SI DI status P1
- r10151.0...2  CO/BO: SI digital inputs status (processor 2) / SI DI status P2
1.5 Parameters for write protection and know-how protection

1.5.1 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 G120 CU240, Version: 4502400, Language: eng, Type: WRITE_NO_LOCK
p0003 Access level / Acc_level
p0010 Drive commissioning parameter filter / Drv comm. par_filt
p0124[0...n] CU detection via LED / CU detection LED
p0970 Reset drive parameters / Drive par reset
p0971 Save parameters / Save par
p0972 Drive unit reset / Drv_unit reset
p2111 Alarm counter / Alarm counter
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
p9400 Safely remove memory card / Mem_card rem
p9484 BICO interconnections search signal source / BICO S_src srch

1.5.2 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 G120 CU240, Version: 4502400, Language: eng, Type: KHP_WRITE_NO_LOCK
p0003 Access level / Acc_level
p0010 Drive commissioning parameter filter / Drv comm. par_filt
p0124[0...n] CU detection via LED / CU detection LED
p0970 Reset drive parameters / Drive par reset
p0971 Save parameters / Save par
p0972 Drive unit reset / Drv_unit reset
p2111 Alarm counter / Alarm counter
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
p9400 Safely remove memory card / Mem_card rem
p9484 BICO interconnections search signal source / BICO S_src srch
1.5.3 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 G120 CU240, Version: 4502400, Language: eng, Type: KHP_ACTIVE_READ

- p0015: Macro drive unit / Macro drv unit
- p0100: IEC/NEMA mot stds / IEC/NEMA mot stds
- p0170: Number of Command Data Sets (CDS) / CDS count
- p0180: Number of Drive Data Sets (DDS) / DDS count
- p0199[0...24]: Drive object name / DO name
- p0300[0...n]: Motor type selection / Mot type sel
- p0304[0...n]: Rated motor voltage / Mot U_rated
- p0305[0...n]: Rated motor current / Mot I_rated
- p0505: Selecting the system of units / Unit sys select
- p0595: Technological unit selection / Tech unit select
- p0730: BI: CU signal source for terminal DO 0 / CU S_src DO 0
- p0731: BI: CU signal source for terminal DO 1 / CU S_src DO 1
- p0732: BI: CU signal source for terminal DO 2 / CU S_src DO 2
- p0806: BI: Inhibit master control / PcCtrl inhibit
- p0922: PROFIdrive telegram selection / PD Telegr_sel
- p1080[0...n]: Minimum speed / n_min
- p1082[0...n]: Maximum speed / n_max
- p1520[0...n]: CO: Torque limit upper / M_max upper
- p2000: Reference speed reference frequency / n_ref f_ref
- p2001: Reference voltage / Reference voltage
- p2002: Reference current / I_ref
- p2003: Reference torque / M_ref
- p2005: Reference angle / Reference angle
- p2006: Reference temp / Ref temp
- p2007: Reference acceleration / a_ref
- p2030: Field bus int protocol selection / Field bus protocol
- p2038: PROFIdrive STW/ZSW interface mode / PD STW/ZSW IF mode
- p2079: PROFIdrive PZD telegram selection extended / PD PZD tel ext
- 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
- p9601: SI enable, functions integrated in the drive (processor 1) / SI enable fct P1
- p9810: SI PROFIsafe address (processor 2) / SI PROFIsafe P2
### Quick commissioning (p0010 = 1)

The parameters required for the quick commissioning (p0010 = 1) are shown in Table 1-7:

<table>
<thead>
<tr>
<th>Par. no.</th>
<th>Name</th>
<th>Access level</th>
<th>Can be changed</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0010</td>
<td>Drive, commissioning parameter filter</td>
<td>1</td>
<td>C(1)T</td>
</tr>
<tr>
<td>p0015</td>
<td>Macro drive unit</td>
<td>1</td>
<td>C,C(1)</td>
</tr>
<tr>
<td>p0100</td>
<td>IEC/NEMA motor standard</td>
<td>1</td>
<td>C(1)</td>
</tr>
<tr>
<td>p0205</td>
<td>Power unit application</td>
<td>1</td>
<td>C(1,2)</td>
</tr>
<tr>
<td>p0230</td>
<td>Drive filter type, motor side</td>
<td>1</td>
<td>C(1,2)</td>
</tr>
<tr>
<td>p0300</td>
<td>Motor type selection</td>
<td>2</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0301</td>
<td>Motor code number selection</td>
<td>2</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0304</td>
<td>Rated motor voltage</td>
<td>1</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0305</td>
<td>Rated motor current</td>
<td>1</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0306</td>
<td>Number of motors connected in parallel:</td>
<td>1</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0307</td>
<td>Rated motor power</td>
<td>1</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0308</td>
<td>Rated motor power factor</td>
<td>1</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0309</td>
<td>Rated motor efficiency</td>
<td>1</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0310</td>
<td>Rated motor frequency</td>
<td>1</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0311</td>
<td>Rated motor speed</td>
<td>1</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0314</td>
<td>Motor pole pair number</td>
<td>3</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0316</td>
<td>Motor torque constant</td>
<td>3</td>
<td>C(1,3)UT</td>
</tr>
<tr>
<td>p0322</td>
<td>Maximum motor speed</td>
<td>1</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0323</td>
<td>Maximum motor current</td>
<td>1</td>
<td>C(1,3)</td>
</tr>
<tr>
<td>p0335</td>
<td>Motor cooling type</td>
<td>2</td>
<td>C(1,3)T</td>
</tr>
<tr>
<td>p0500</td>
<td>Technology application</td>
<td>4</td>
<td>PM230</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C(1,5)T</td>
</tr>
<tr>
<td>p0500</td>
<td>Technology application</td>
<td>2</td>
<td>PM240 PM250 PM260, PM330</td>
</tr>
<tr>
<td>p0640</td>
<td>Current limit</td>
<td>2</td>
<td>C(1,3)UT</td>
</tr>
<tr>
<td>p0922</td>
<td>PROFIdrive telegram selection</td>
<td>1</td>
<td>C(1)T</td>
</tr>
<tr>
<td>p0970</td>
<td>Reset drive parameters</td>
<td>1</td>
<td>C(1,30)</td>
</tr>
<tr>
<td>p1080</td>
<td>Minimum speed</td>
<td>1</td>
<td>C(1)T</td>
</tr>
<tr>
<td>p1082</td>
<td>Maximum speed</td>
<td>1</td>
<td>C(1)T</td>
</tr>
<tr>
<td>p1120</td>
<td>Ramp-function generator, ramp-up time</td>
<td>1</td>
<td>C(1)UT</td>
</tr>
<tr>
<td>p1121</td>
<td>Ramp-function generator, ramp-down time</td>
<td>1</td>
<td>C(1)UT</td>
</tr>
<tr>
<td>p1135</td>
<td>OFF3 ramp-down time</td>
<td>2</td>
<td>C(1)UT</td>
</tr>
</tbody>
</table>
If p0010 = 1 is selected, p0003 (user access level) can be used to select the parameters that are to be accessed.

At the end of the quick commissioning, set p3900 = 1 to perform the required motor calculations and reset all other parameters (not included in p0010 = 1) to their default settings.

---

**Note:**

This only applies for the quick commissioning.
Parameters

Quick commissioning \((p0010 = 1)\)
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</tr>
</tbody>
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<table>
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<th>Function Diagrams</th>
<th>Page</th>
</tr>
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<td>7212 – OR (OR function block with 4 inputs)</td>
<td>2-619</td>
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<td>7214 – XOR (XOR function block with 4 inputs)</td>
<td>2-620</td>
</tr>
<tr>
<td>7216 – NOT (inverter)</td>
<td>2-621</td>
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Function diagrams

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Fig. 2-1 1020 – Explanation of the symbols (Part 1)

Information on parameters, binectors, connectors

Symbol | Meaning
--- | ---
Parameter name | Parameter name (up to 18 characters) [dimension unit]
nxxx[y] or nxxx[y...z] or nxxx[y].ww or nxxx.ww | Monitoring parameter with unit [Unit] and index range [y...z] or data set [C/D]
"=" = monitoring parameter. These parameters are read-only
"nxxx" stands for the parameter number
"y" specifies the applicable index, ",y...z" specifies the index range
"ww" specifies the bit number (e.g. 0...15).
pxxxx[y] or pxxx[y].ww or pxxx.ww | Setting parameter with min/max value and unit [Unit] data set [C/D] and factory setting (Def)
"p" = setting parameter. These parameters can be changed.
"nxxx" stands for the parameter number.
"y" specifies the applicable index, ",y...z" specifies the index range ",ww" specifies the bit number (e.g. 0...15).
from ... to | Parameter number (xxxx) with Index number [y] and bit number .ww.
(xxxx).ww | Factory setting.
(Def) | Factory setting with bit number as prefix.
(Def.w) | Diagram references for setting parameters that occur a multiple number of times.
[aaaa.b] | [Function diagram number, signal path]

Cross references between diagrams

Symbol | Meaning
--- | ---
Signal path | The function diagrams are sub-divided into signal paths 1...8 in order to facilitate orientation.
Text | "aaaa.b" = Signal to target diagram aaaa b = Signal to signal path b
[ccc.c] | Text = Unique signal designation
Text | cccc = Signal from source diagram cccc d = Signal from signal path d
To "function diagram name" [aaaa.b] = binectors.

Cross references for control bits

Symbol | Meaning
--- | ---
pxxxx | Original parameter of signal
[aaaa.b] | aaaa = Signal from source diagram aaaa b = Signal from signal path b

*) For some parameters the value for the factory setting is calculated during commissioning for they are dependent on Power Module and motor (see Section 1.1.1 "Calculated").
Symbols for logic functions

Logical inversion

AND element with logical inversion of an input signal

OR element

Exclusive-OR/XOR

R/S flip-flop

Symbols for computational and closed-loop control functions

Sign reversal

Absolute value generator

Divider

Comparator

Differentiator

Symbols for computational and closed-loop control functions

Threshold value switch 1/0

Threshold value switch 0/1

Threshold value 1/0 with hysteresis

Threshold value 0/1 with hysteresis

Limiter

Sample & Hold element

Symbols for monitoring

Monitoring

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- 1021 -

fp_1021_97_61.vsd Function diagram - 1021 -

Switch-on delay
The digital signal x must have the value "1" without any interruption during the time T before output y changes to "1".

Switch-off delay
The digital signal x must have the value "0" without interruption during the time T before output y changes to "0".

Delay (switch-on and switch-off)
The digital signal x must have the value "1" without interruption during time T1 or must have the value "0" during time T2 before output y changes its signal state.

Switch symbol
Simple changeover switch
The switch position is shown according to the factory setting (in this case, switch position 1 in the default state on delivery).

PT1 element
Delay element, first order.
pxxxx = time constant

PT2 low pass
Natural frequency, denominator fn_n pxxxx Damping, denominator D_n pxxxx

2nd-order filter (bandstop/general filter)
Natural frequency, numerator fn_z pxxxx Damping, numerator D_z pxxxx
Natural frequency, denominator fn_n pxxxx Damping, denominator D_n pxxxx

Switch-on delay
Switch symbol
Switch-off delay
Delay (switch-on and switch-off)

Transfer function
H(s) = \frac{1}{2 \cdot fn_{n} + 2 \cdot D_{n} + s + 1}

Transfer function when used as general filter
H(s) = \frac{1}{2 \cdot fn_{n} + 2 \cdot D_{n} + s + 1}

Analog adder can be activated
The following applies to I = 1 signal: y = x1 + x2
The following applies to I = 0 signal: y = x1

Explanations for the function diagrams
Explanation of the symbols (Part 3)

Fig. 2-3 1022 – Explanation of the symbols (Part 3)

2nd-order filter (bandstop/general filter)
- center frequency fn_z = fn_n = fn
- bandwidth f_B: D_z = 0, D_n = \frac{f_B}{2 \cdot fn}

Transfer function when used as general filter
H(s) = \frac{s + 1}{2 \cdot fn_{n} + 2 \cdot D_{n} + s + 1}
Handling BICO technology

Binector:  
Connectors are "analog signals" that can be freely interconnected (e.g. percentage variables, speeds or torques).

Connector:  
Connectors are also "CO:" display parameters (CO = Connector Output).

Parameterization:
At the signal destination, the required binector or connector is selected using appropriate parameters:
- "BI:" parameter for binectors (BI = Binector Input)
- "CI:" parameter for connectors (CI = Connector Input)

Example:
The main setpoint for the speed controller (CI: p1070) should be received from the output of the motorized potentiometer (CO: r1050) and the "jog" command (BI: p1055) from digital input DI0 (BO: r0722.0, Terminal 5 (Kl.5)) on the CU.

Parameterizing steps:
1. p1055[0] = 722.0   Terminal 5 (Kl.5) acts as "Jog bit 0".
2. p1070[0] = 1050   The output of the motorized potentiometer acts as main setpoint for the speed controller.
### 2.3 Overviews

#### Function diagrams

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Overviews

Function diagrams

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Fig. 2-6 1530 – Internal control/status words, data sets

- Sequence control
  - STW seq ctrl
  - ZSW seq ctrl

- Setpoint Channel
  - STW setpoint chan

- Speed controller
  - STW n ctrl
  - ZSW n ctrl

- Controller
  - ZSW cl-loop ctrl

- Current control
  - ZSW l ctrl

- Monitoring functions
  - ZSW monitor 1
  - ZSW monitor 2
  - ZSW monitor 3

- Faults/alarms
  - STW fault/alarm
  - ZSW fault/alarm 1
  - ZSW fault/alarm 2

- CDS - Command Data Sets
  - CDS selected

- DDS - Drive Data Sets
  - DDS selected
<1> PM250, PM260: The current limit is calculated out of \( r0206 \) [2] in generative operation.

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Overviews

Function diagrams

Fig. 2-9 1700 – Vector control, speed control and generation of the torque limits

- 1700 -
2.4 Input/output terminals

Function diagrams

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External power supply
24 V DC

NPN or PNP

<1> Kl. = Terminal
Sampling time of the DI: 2 ms

1 = Simulation on CU DI simulation
p0724

CU DI status inv
r0723

CU DI status
r0722

CU DI t_debounce
p0724

CU DI status inv
r0723

CU DI status
r0722

CU DI status inv
r0723

CU DI status
r0722

CU DI status inv
r0723

CU DI status
r0722

CU DI status inv
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CU DI status
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CU DI status inv
r0723

CU DI status
r0722

CU DI status inv
r0723

CU DI status
For Example: 

KL.1 +10 V OUT

KL.2 GND

KL.3 AI0+ (DI11)

KL.4 AI0-

1.6 V 4.0 V

Sampling time of the DI: 4 ms

1 = Simulation on
CU DI simulation
p0795.11

CU DI debounce
p0724

For Example:

KL. = Terminal

Input/output terminals

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Fig. 2-15 2222 – CU240E-2: Analog inputs as digital inputs (DI11 ... DI12)

For Example:

- Kl.1 +10 V OUT
- Kl.2 GND
- Kl.3 AI0+ (DI11)
- Kl.4 AI0- (DI12)
- 1 = Simulation on CU DI simulation:
  - p0795.11
  - r0721.11
  - r0721.12
  - p0796.11
  - p0796.12
- CU DI t_debounce:
  - p0724
- CU DI status inv:
  - r0723
- CU DI status:
  - r0722
  - r0723.11
  - r0724
  - r0722.11

Sampling time of the DI: 4 ms

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Fig. 2-18 9567 - CU240B-2: Analog input 0 (AI0)

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Input/output terminals

Analog input 0 (AI0)

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Fig. 2-19 9566 – CU240E-2: Analog inputs 0 ... 1 (AI0 ... AI1)

Function diagram

Current AI0/1 Uj 11
Voltage Kl.3
Kl.10
0 ... 20 mA
-10 ... +10 V

<1> Differential input!
For an input signal referred to ground, terminal 4 (11) must be connected to reference potential M.
Caution:
The voltage between an input (Kl.3 (Kl.10) or Kl.4 (Kl.11)) and the ground point must not exceed 35 V.
When the load resistor is switched in (DIP switch in position /g313I), the voltage between the input terminals
must not exceed 10 V or the impressed current 80 mA.

<2> For p0756 = 2, 3 the units are mA.
For p0756 = 0, 1, 4 the units are V.

<3> Possible settings p0756[0] and p0756[1]:
0: 0 V ... +10 V
1: +2 V ... +10 V with monitoring
2: 0 mA ... +20 mA
3: 4 mA ... +20 mA with monitoring
4: -10 V ... -10 V (Default for AI0 and AI1)

<4> Wire breakage sensing only activated when p0756 = 1, 3.

<5> Values in brackets --> AI1

Reference quantities p2000 ... r2004

Hardware smoothing 100 μs

Type switching Analog input

CU AI sim_mode
p0797[0] (0)
0
1

CU AI sim_setp
p0798[0] (0.000)
-50.000 ... 2000.000

CU AI T_smooth
p0753[0] (0.0)
0.0 ... 1000.0 [ms]

CU AI char x1
p0757[0] (0.000)
-50.000 ... 160.000

CU AI char x2
p0759[0] (10.000)
-50.000 ... 160.000

CU AI char y1
p0758[0] (0.00)
-1000.00 ... 1000.00 [%]

CU AI char y2
p0760[0] (100.00)
-1000.00 ... 1000.00 [%]

CU wire brake t_del
p0762[0] (100)
0 ... 1000 [ms]

CU WireBrkThresh
p0761[0] (2.00)
0.00 ... 20.00

CU AI status word
10751

Scaling

Reference quantities p2000 ... r2004

100 %
Fig. 2-20  
9573 – CU240B-2: Analog output 0 (AO0)  

For p0776 = 0, 2 the units are mA.  
For p0776 = 1 the units are V.  

For p0776 = 0, 2 the units are mA.  
For p0776 = 1 the units are V.  

Reference quantities  
p2000 … r2004  

<3> The input signals are referred to the reference quantities p2000 … r2004 (100 % = p200x).  

<4> Possible settings p0776[0]:  
   = 0: 0 ... +20 mA  
   = 1: 0 ... +10 V  
   = 2: 4 ... +20 mA  

Sampling time of the AO : 4 ms  

Kl = Terminal  

<table>
<thead>
<tr>
<th>Input/Output Terminals</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>
</tr>
</thead>
<tbody>
<tr>
<td>Analog output 0 (AO0)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20.12.2011</td>
<td>V4.5</td>
<td>G120 CU240B-2</td>
</tr>
<tr>
<td>fp_9573_97_02.vsd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Function diagram</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Fig. 2-21 9572 – CU240E-2: Analog outputs 0 ... 1 (AO0 ... AO1)**

Reference quantities p2000 ... r2004

<1> For p0776 = 0, 2 the units are mA.
For p0776 = 1 the units are V.

<3> The input signals are referred to the reference quantities p2000 ... r2004 (100 % = p200x).

**Sampling time of the AO : 4 ms**

<table>
<thead>
<tr>
<th>Input/Output Terminals</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>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Analog outputs 0 ... 1 (AO0 ... AO1)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.5 Communication, fieldbus interface (USS, Modbus)

Function diagrams (CU240B/E-2)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9310</td>
<td>Configuration, addresses and diagnostics</td>
<td>2-528</td>
</tr>
<tr>
<td>9342</td>
<td>STW1 control word interconnection</td>
<td>2-529</td>
</tr>
<tr>
<td>9352</td>
<td>ZSW1 status word interconnection</td>
<td>2-530</td>
</tr>
<tr>
<td>9360</td>
<td>Receive telegram, free interconnection via BICO</td>
<td>2-531</td>
</tr>
<tr>
<td>9370</td>
<td>Send telegram, free interconnection via BICO</td>
<td>2-532</td>
</tr>
<tr>
<td>9372</td>
<td>Status words, free interconnection</td>
<td>2-533</td>
</tr>
</tbody>
</table>
Fig. 2-22 9310 – Configuration, addresses and diagnostics

Fieldbus configuration

- Fieldbus baud
  - 4 ... 13
  - p2020 (8)
- Fieldbus address
  - 0 ... 30
  - p2021 (0)
- Fieldbus USS P2D
  - 0 ... 8
  - p2022 (2)
- Fieldbus USS PKW
  - 0 ... 127
  - p2023 (127)

USS configuration

- Fieldbus protocol
  - 0 ... 2
  - p2030 (3)
  - 0
  - 2

Modbus configuration

- Fieldbus baud
  - 5 ... 13
  - p2020 (7)
- Fieldbus address
  - 1 ... 247
  - p2021 (1)
- Fieldbus times
  - 0 ... 10000 [ms]
  - p2024 (1000)

Monitoring functions

- Fieldbus t_monit
  - 0 ... 1999999 [ms]
  - p2040 (100)

Cyclic telegrams from the master

- Telegrams to the master

Diagnostic parameters

- Field bus error
  - r2029

Function diagrams

Communication, fieldbus interface (USS, Modbus)

<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>Fieldbus Interface (USS, Modbus on RS485)</td>
<td>fp_9310_97_66.vsd</td>
<td>Function diagram</td>
<td>- 9310 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Configuration, addresses and diagnostics</td>
<td>20.12.2011 V4.5</td>
<td>G120 CU240B/E-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Signal targets for fieldbus STW1 (p0700 = 6)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>(Function diagram) internal control word</th>
<th>(Function diagram) signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW1.0</td>
<td>▲ = ON (pulses can be enabled) 0 = OFF1 (braking with ramp-function generator, then pulse suppression &amp; ready for switching on)</td>
<td>p0840[0] = r2090.0</td>
<td>[2501.3]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>STW1.1</td>
<td>1 = No OFF2 (enable is possible) 0 = OFF2 (immediate pulse suppression and switching on inhibited)</td>
<td>p0844[0] = r2090.1</td>
<td>[2501.3]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>STW1.2</td>
<td>1 = No OFF3 (enable is possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)</td>
<td>p0848[0] = r2090.2</td>
<td>[2501.3]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>STW1.3</td>
<td>1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (suppress pulses)</td>
<td>p0852[0] = r2090.3</td>
<td>[2501.3]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>STW1.4</td>
<td>1 = Operating condition (the ramp-function generator can be enabled) 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)</td>
<td>p1140[0] = r2090.4</td>
<td>[2501.3]</td>
<td>[3060] [3070] [3080]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.5</td>
<td>1 = Enable the ramp-function generator 0 = Stop the ramp-function generator (freeze the ramp-function generator output)</td>
<td>p1141[0] = r2090.5</td>
<td>[2501.3]</td>
<td>[3060] [3070]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.6</td>
<td>1 = Enable setpoint 0 = Inhibit setpoint (set the ramp-function generator input to zero)</td>
<td>p1142[0] = r2090.6</td>
<td>[2501.3]</td>
<td>[3060] [3070] [3080]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.7</td>
<td>▲ = Acknowledge faults</td>
<td>p2103[0] = r2090.7</td>
<td>[2546.1]</td>
<td>[8060]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.8</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.9</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.10</td>
<td>1 = Control via PLC</td>
<td>&lt;1&gt;</td>
<td>p0854[0] = r2090.10</td>
<td>[2501.3]</td>
<td>[2501]</td>
</tr>
<tr>
<td>STW1.11</td>
<td>1 = Dir of rot reversal</td>
<td>p1113[0] = r2090.11</td>
<td>[2505.3]</td>
<td>[3040]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.12</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.13</td>
<td>1 = Motorized potentiometer, setpoint, raise</td>
<td>p1035[0] = r2090.13</td>
<td>[2505.3]</td>
<td>[3020]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.14</td>
<td>1 = Motorized potentiometer, setpoint, lower</td>
<td>p1036[0] = r2090.14</td>
<td>[2505.3]</td>
<td>[3020]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.15</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<1> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.
### Signal sources for fieldbus ZSW1 (p0700 = 6)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal control word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW1.0</td>
<td>1 = Ready for switching on</td>
<td>p2080[0] = r0899.0</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.1</td>
<td>1 = Ready for operation (DC link loaded, pulses inhibited)</td>
<td>p2080[1] = r0899.1</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.2</td>
<td>1 = Operation enabled (drive follows n_set)</td>
<td>p2080[2] = r0899.2</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.3</td>
<td>1 = Fault present</td>
<td>p2080[3] = r2139.3</td>
<td>[2548.7]</td>
<td>[8060]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.4</td>
<td>1 = No coast down active (OFF2 inactive)</td>
<td>p2080[4] = r0899.4</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.5</td>
<td>1 = No fast stop active (OFF3 inactive)</td>
<td>p2080[5] = r0899.5</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.6</td>
<td>1 = Switching on inhibited active</td>
<td>p2080[6] = r0899.6</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.7</td>
<td>1 = Alarm present</td>
<td>p2080[7] = r2139.7</td>
<td>[2548.7]</td>
<td>[8065]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.8</td>
<td>1 = Speed setpoint - actual value deviation within tolerance t_off</td>
<td>p2080[8] = r2197.7</td>
<td>[2534.7]</td>
<td>[8011]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.9</td>
<td>1 = Control requested</td>
<td>p2080[9] = r0899.9</td>
<td>[2503.7]</td>
<td>[2503]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.10</td>
<td>1 = f or n comparison value reached/exceeded</td>
<td>p2080[10] = r2199.1</td>
<td>[2536.7]</td>
<td>[8010]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.11</td>
<td>1 = I, M, or P limit not reached</td>
<td>p2080[11] = r1407.7</td>
<td>[2522.7]</td>
<td>[8060]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.12</td>
<td>1 = Open holding brake</td>
<td>p2080[12] = r0899.12</td>
<td>[2503.7]</td>
<td>[2701]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.13</td>
<td>1 = No motor overtemperature alarm</td>
<td>p2080[13] = r2135.14</td>
<td>[2548.7]</td>
<td>[8016]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.14</td>
<td>1 = Motor rotates forwards (n_actual &gt; 0) 0 = Motor rotates backwards (n_actual &lt; 0)</td>
<td>p2080[14] = r2197.3</td>
<td>[2534.7]</td>
<td>[8011]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.15</td>
<td>1 = No alarm, thermal overload, power unit</td>
<td>p2080[15] = r2135.15</td>
<td>[2548.7]</td>
<td>[8014]</td>
<td>-</td>
</tr>
</tbody>
</table>

<1> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0...15])

<2> The drive is ready to accept data.

![Function diagram](fp_9352_97_62.vsd)
**Function Diagram: Receive Telegram, Free Interconnection via BICO**

1. Receive telegram
2. PZD receive word 1
3. PZD receive word 2
4. PZD receive word 3
5. PZD receive word 4
6. PZD receive word 5
7. PZD receive word 6
8. PZD receive word 7
9. PZD receive word 8
10. PZD receive word 9
11. PZD receive word 10
12. PZD receive word 11
13. PZD receive word 12

**Notes:**

- **<1>** The receive word 1 must be used as control word (STW1) (due to bit 10 "control requested"). The preconfiguration is set automatically via p0700 = 6.
- **<2>** The preconfiguration with the speed setpoint is set automatically via p1000 = 6.
- **<3>** Using the connector-binector converters, the bits can be extracted from two of the PZD receive words 3 to 8 and used as binectors.
- **<4>** The following representation applies for words: 4000 hex = 100 %.
  - The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
  - The following applies for temperature values: 100° C -> 100 % = 4000 hex, 0° C -> 0 %.

**Communication, Fieldbus Interface (USS, Modbus)**

Fieldbus Interface (USS, Modbus on RS485)

Receive telegram, free interconnection via BICO

<table>
<thead>
<tr>
<th></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>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fieldbus Interface (USS, Modbus on RS485)</td>
<td>fp_9360_97_52.vsd</td>
<td>Function diagram</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The send word 1 must be used as status word (ZSW1). The preconfiguration is set automatically via p0700 = 6.

The preconfiguration with the speed setpoint is set automatically via p1000 = 6.

Physical word values are inserted in the telegram as referenced variables. p200x apply as reference variables (telegram contents = 4000 hex, if the input variable has the value p200x).

The following applies for temperature values: 100 °C -> 100 % = 4000 hex; 0 °C -> 0%.
5 binector-connector converter

Bin/Con ZSW1
Bin/Con ZSW2
Bin/Con ZSW3
Bin/Con ZSW4
Bin/Con ZSW5
Bin/Con ZSW6

Fieldbus Interface (USS, Modbus on RS485)

Status words, free interconnection
## 2.6 PROFIdrive communication (PROFIBUS)

### Function diagrams (CU240B/E-2_DP)

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<th>Function</th>
<th>Description</th>
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</thead>
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<td>PROFIBUS, addresses and diagnostics</td>
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<tr>
<td>2420</td>
<td>Telegrams and process data (PZD)</td>
<td>2-536</td>
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<td>2440</td>
<td>PZD receive signals interconnection</td>
<td>2-537</td>
</tr>
<tr>
<td>2441</td>
<td>STW1 control word interconnection (p2038 = 2)</td>
<td>2-538</td>
</tr>
<tr>
<td>2442</td>
<td>STW1 control word interconnection (p2038 = 0)</td>
<td>2-539</td>
</tr>
<tr>
<td>2444</td>
<td>STW3 control word interconnection (p2038 = 0)</td>
<td>2-540</td>
</tr>
<tr>
<td>2450</td>
<td>PZD send signals interconnection</td>
<td>2-541</td>
</tr>
<tr>
<td>2451</td>
<td>ZSW1 status word interconnection (p2038 = 2)</td>
<td>2-542</td>
</tr>
<tr>
<td>2452</td>
<td>ZSW1 status word interconnection (p2038 = 0)</td>
<td>2-543</td>
</tr>
<tr>
<td>2454</td>
<td>ZSW3 status word interconnection (p2038 = 0)</td>
<td>2-544</td>
</tr>
<tr>
<td>2468</td>
<td>Receive telegram, free interconnection via BICO (p0922 = 999)</td>
<td>2-545</td>
</tr>
<tr>
<td>2470</td>
<td>Send telegram, free interconnection via BICO (p0922 = 999)</td>
<td>2-546</td>
</tr>
<tr>
<td>2472</td>
<td>Status words, free interconnection</td>
<td>2-547</td>
</tr>
</tbody>
</table>
### CU-specific functions

**Setting the PROFIBUS address**

- **DIP switch on the control unit**
  - BUS ADDRESS
  - ON
  - All DIP switches to ON or OFF

**Significance**

- **POWER ON**
- **Actual PROFIBUS address**
- **Memory**
- **Set**

**PD-PZD state**

- **r2043.0**

**PB address**

- **1 ... 126**
- **p0918 (126)**

**PB status**

- **r2054**

**PB diag standard**

- **r2055 [0..2]**

**Diagnostic parameters**

- **Diag offs recv**
  - r2075

- **Diag offs send**
  - r2076

### Drive-specific functions

#### Monitoring functions

- **Cyclic telegrams from the master**
- **t**

#### Alarms

- **A01920 "PROFIBUS: Cyclic connection interrupted"**
  - t > t_response

- **No cyclic telegrams from the master**

#### Faults

- **F01910 "PROFIBUS setpoint timeout"**
  - No telegrams from the master

- **A01900 "PROFIBUS: Configuration telegram incorrect"**
- **A01901 "PROFIBUS: Parameterizing telegram incorrect"**

**The response monitoring time t_An is automatically defined by the configuration tool (e.g., HW Config made by Siemens) within the framework of PROFIBUS configuration.**

**Diagnostic parameters**

- **PD PZD state**
- **PB address**
- **PB status**
- **PB diag standard**
- **PB faults delay**
- **PB status**
- **PB diag standard**
- **PB faults delay**
- **PB status**
- **PB diag standard**
- **PB faults delay**

**Function diagrams**

- **Fig. 2-28 2410 – PROFIBUS, addresses and diagnostics**
- **fp_2410_97_53.vsd**
- **20.12.2011 V4.5**

**PROFIBUS (PB) / PROFINET (PN), addresses and diagnostics**

- **G120 CU240B/E-2_DP**
If p0922 = 999 is changed to another value, the telegram is automatically assigned.
If p0922 unequal 999 is changed to p0922 = 999, the "old" telegram assignment is maintained!

Freely interconnectable (pre-setting: MELD_NAMUR).

<1> Can be freely connected.
<2> In order to comply with the PROFIdrive profile, PZD1 must be used as control word 1 (STW1) or status word 1 (ZSW1).

p2037 = 2 should be set if STW1 is not transferred with PZD1 as specified in the PROFIdrive profile.
Signal receivers for PZD receive signals

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>PROFIdrive Signal No.</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Data type</th>
<th>Scaling</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW1</td>
<td>Control word 1</td>
<td>1</td>
<td>(bit serial)</td>
<td>[2442]</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>[3030.2]</td>
<td>I16</td>
<td>4000 hex 2 p2000</td>
</tr>
<tr>
<td>M_LIM</td>
<td>Torque limit</td>
<td>310</td>
<td>p1552, p1554</td>
<td>[6060.1]</td>
<td>U16</td>
<td>4000 hex 2 100 %</td>
</tr>
<tr>
<td>STW3</td>
<td>Control word 3</td>
<td>304</td>
<td>(bit serial)</td>
<td>[2444]</td>
<td>U16</td>
<td>-</td>
</tr>
</tbody>
</table>

<1> When selecting a standard telegram or a manufacturer-specific telegram via p0922, these interconnection parameters of the command data set CDS are automatically set to 0.<br>
<2> Data type according to the PROFIdrive profile: I16 = Integer16, U16 = Unsigned16.<br>
<3> Display parameters for receive data according to [2460].

<4> Only SIEMENS telegram 350

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SINAMICS G120 CU240B/E-2 Control Units List Manual (LH11), 01/2012
### Signal targets for STW1 in Interface Mode VIK-NAMUR (p2038 = 2)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal control word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW1.0</td>
<td>$p = $ON (pulses can be enabled) $f = $OFF1 (braking with ramp-function generator, then pulse suppression &amp; ready for switching on) $0 = $OFF2 (emergency pulse suppression and switching on inhibited)</td>
<td>p0840[0] = r2090.0</td>
<td>[2501.3]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>STW1.1</td>
<td>1 = No OFF2 (enable is possible) $0 = $OFF2 (emergency pulse suppression and switching on inhibited)</td>
<td>p0844[0] = r2090.1</td>
<td>[2501.3]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>STW1.2</td>
<td>1 = No OFF3 (enable is possible) $0 = $OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)</td>
<td>p0848[0] = r2090.2</td>
<td>[2501.3]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>STW1.3</td>
<td>1 = Enable operation (pulses can be enabled) $0 = $Inhibit operation (suppress pulses)</td>
<td>p0852[0] = r2090.3</td>
<td>[2501.3]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>STW1.4</td>
<td>1 = Operating condition (the ramp-function generator can be enabled) $0 = $Inhibit ramp-function generator (set the ramp-function generator output to zero)</td>
<td>p1140[0] = r2090.4</td>
<td>[2501.3]</td>
<td>[3060] [3070] [3080]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.5</td>
<td>1 = Enable the ramp-function generator $0 = $Stop the ramp-function generator (freeze the ramp-function generator output)</td>
<td>p1141[0] = r2090.5</td>
<td>[2501.3]</td>
<td>[3060] [3070]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.6</td>
<td>1 = Enable setpoint $0 = $Inhibit setpoint (set the ramp-function generator input to zero)</td>
<td>p1142[0] = r2090.6</td>
<td>[2501.3]</td>
<td>[3060] [3070] [3080]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.7</td>
<td>$p = $Acknowledge faults</td>
<td>p2103[0] = r2090.7</td>
<td>[2546.1]</td>
<td>[8060]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.8</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.9</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.10</td>
<td>1 = Control via PLC</td>
<td>p0854[0] = r2090.10</td>
<td>[2501.3]</td>
<td>[2501]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.11</td>
<td>1 = Dir of rot reversal</td>
<td>p1113[0] = r2090.11</td>
<td>[2505.3]</td>
<td>[3040]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.12</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.13</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.14</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.15</td>
<td>1 = CDS selection</td>
<td>p0810[0] = r2090.15</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
</tr>
</tbody>
</table>

**<1>** Used in telegram 20.

**<2>** Bit 10 in STW1 must be set to ensure that the drive accepts the process data.

**<3>** Interconnection is not disabled.
### Signal targets for STW1 in Interface Mode SINAMICS (p2038 = 0)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal control word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW1.0</td>
<td>= ON (pulses can be enabled)</td>
<td>p0840[0] = r2090.0</td>
<td>[2501.3]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0 = OFF1 (braking with ramp-function generator, then pulse suppression &amp; ready for switching on)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.1</td>
<td>1 = No OFF2 (enable is possible)</td>
<td>p0844[0] = r2090.1</td>
<td>[2501.3]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0 = OFF2 (immediate pulse suppression and switching on inhibited)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.2</td>
<td>1 = No OFF3 (enable is possible)</td>
<td>p0848[0] = r2090.2</td>
<td>[2501.3]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.3</td>
<td>1 = Enable operation (pulses can be enabled)</td>
<td>p0852[0] = r2090.3</td>
<td>[2501.3]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0 = Inhibit operation (suppress pulses)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.4</td>
<td>1 = Operating condition (the ramp-function generator can be enabled)</td>
<td>p1140[0] = r2090.4</td>
<td>[2501.3]</td>
<td>[3060] [3070] [3080]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.5</td>
<td>1 = Enable the ramp-function generator</td>
<td>p1141[0] = r2090.5</td>
<td>[2501.3]</td>
<td>[3060] [3070]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = Stop the ramp-function generator (freeze the ramp-function generator output)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.6</td>
<td>1 = Enable setpoint</td>
<td>p1142[0] = r2090.6</td>
<td>[2501.3]</td>
<td>[3060] [3070] [3080]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 = Inhibit setpoint (set the ramp-function generator input to zero)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.7</td>
<td>= Acknowledge faults</td>
<td>p2103[0] = r2090.7</td>
<td>[2546.1]</td>
<td>[8060]</td>
<td></td>
</tr>
<tr>
<td>STW1.8</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>STW1.9</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>STW1.10</td>
<td>1 = Control via PLC</td>
<td>p0854[0] = r2090.10</td>
<td>[2501.3] [2501]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.11</td>
<td>1 = Dir of rot reversal</td>
<td>p1113[0] = r2090.11</td>
<td>[2505.3]</td>
<td>[3040]</td>
<td></td>
</tr>
<tr>
<td>STW1.12</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>STW1.13</td>
<td>1 = Motorized potentiometer, setpoint, raise</td>
<td>p1035[0] = r2090.13</td>
<td>[2505.3]</td>
<td>[3020]</td>
<td></td>
</tr>
<tr>
<td>STW1.14</td>
<td>1 = Motorized potentiometer, setpoint, lower</td>
<td>p1036[0] = r2090.14</td>
<td>[2505.3]</td>
<td>[3020]</td>
<td></td>
</tr>
<tr>
<td>STW1.15</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

<1> Used in telegrams 1, 350, 352, 353, 354.

<2> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.
### Signal targets for STW3 in Interface Mode SINAMICS (p2038 = 0)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Internal Control Word</th>
<th>Signal Target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW3.0</td>
<td>1 = Fixed setp bit 0</td>
<td>p1020[0] = r2093.0</td>
<td>[3010.2]</td>
<td>-</td>
</tr>
<tr>
<td>STW3.1</td>
<td>1 = Fixed setp bit 1</td>
<td>p1021[0] = r2093.1</td>
<td>[3010.2]</td>
<td>-</td>
</tr>
<tr>
<td>STW3.2</td>
<td>1 = Fixed setp bit 2</td>
<td>p1022[0] = r2093.2</td>
<td>[3010.2]</td>
<td>-</td>
</tr>
<tr>
<td>STW3.3</td>
<td>1 = Fixed setp bit 3</td>
<td>p1023[0] = r2093.3</td>
<td>[3010.2]</td>
<td>-</td>
</tr>
<tr>
<td>STW3.4</td>
<td>1 = DDS select. bit 0</td>
<td>p0820 = r2093.4</td>
<td>[8565.2]</td>
<td>-</td>
</tr>
<tr>
<td>STW3.5</td>
<td>1 = DDS select. bit 1</td>
<td>p0821 = r2093.5</td>
<td>[8565.2]</td>
<td>-</td>
</tr>
<tr>
<td>STW3.6</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW3.7</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW3.8</td>
<td>1 = Technology controller enable</td>
<td>p2200[0] = r2093.8</td>
<td>[7958.4]</td>
<td>-</td>
</tr>
<tr>
<td>STW3.9</td>
<td>1 = DC brake enable</td>
<td>p1230[0] = r2093.9</td>
<td>[7017.1]</td>
<td>-</td>
</tr>
<tr>
<td>STW3.10</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW3.11</td>
<td>1 = Droop enable</td>
<td>p1492[0] = r2093.11</td>
<td>[6030.1]</td>
<td>-</td>
</tr>
<tr>
<td>STW3.12</td>
<td>1 = Torque control active</td>
<td>p1501[0] = r2093.12</td>
<td>[6060.1]</td>
<td>-</td>
</tr>
<tr>
<td>STW3.13</td>
<td>0 = External fault 1 (F07860)</td>
<td>p2108[0] = r2093.13</td>
<td>[8060.1]</td>
<td>-</td>
</tr>
<tr>
<td>STW3.14</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW3.15</td>
<td>1 = CDS bit 1</td>
<td>p0811[0] = r2093.15</td>
<td>[8560.3]</td>
<td>-</td>
</tr>
</tbody>
</table>

<1> Used in telegrams 350.
Signal sources for PZD send signals

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
<th>PROFIdrive parameter</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Data type</th>
<th>Scaling</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>NIST_A</td>
<td>Actual speed A (16 bit)</td>
<td>6</td>
<td>r0063[0]</td>
<td>16</td>
<td>4000 hex</td>
<td>p2000</td>
</tr>
<tr>
<td>IAST.GLATT</td>
<td>Absolute actual current, smoothed</td>
<td>51</td>
<td>r006[1]</td>
<td>(6799)</td>
<td>I16</td>
<td>4000 hex p2002</td>
</tr>
<tr>
<td>MIST.GLATT</td>
<td>Actual torque smoothed</td>
<td>53</td>
<td>r008[0]</td>
<td>(6799)</td>
<td>I16</td>
<td>4000 hex p2003</td>
</tr>
<tr>
<td>PIST.GLATT</td>
<td>Power factor, smoothed</td>
<td>54</td>
<td>r008[1]</td>
<td>(6799)</td>
<td>I16</td>
<td>4000 hex p2004</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>&lt;1&gt;</td>
<td></td>
<td>U16</td>
<td></td>
</tr>
<tr>
<td>WARN_CODE</td>
<td>Alarm code</td>
<td>303</td>
<td>&lt;1&gt;</td>
<td></td>
<td>U16</td>
<td></td>
</tr>
<tr>
<td>ZSW3</td>
<td>Status word 3</td>
<td>305</td>
<td>r0053</td>
<td>(2454)</td>
<td>U16</td>
<td></td>
</tr>
</tbody>
</table>

<1> Data type according to the PROFIdrive profile: I16 = Integer16, U16 = Unsigned16.

PROFIdrive / PROFIBUS

Function diagrams

PZD send signals interconnection

PROFIdrive send telegram

Telegram assignment according to p0922 [2420]

Header

Data

Trailer

PROFIBUS

Data type according to the PROFIdrive profile: I16 = Integer16, U16 = Unsigned16.
Signal sources for ZSW1 in Interface Mode VIK-NAMUR (p2038 = 2)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal control word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW1.0</td>
<td>1 = Ready for switching on</td>
<td>p2080[0] = r0899.0</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.1</td>
<td>1 = Ready for operation (DC link loaded, pulses inhibited)</td>
<td>p2080[1] = r0899.1</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.2</td>
<td>1 = Operation enabled (drive follows n_set)</td>
<td>p2080[2] = r0899.2</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.3</td>
<td>1 = Fault present</td>
<td>p2080[3] = r2139.3</td>
<td>[2548.7]</td>
<td>[8060]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.4</td>
<td>1 = No coast down active (OFF2 inactive)</td>
<td>p2080[4] = r0899.4</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.5</td>
<td>1 = No fast stop active (OFF3 inactive)</td>
<td>p2080[5] = r0899.5</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.6</td>
<td>1 = Switching on inhibited active</td>
<td>p2080[6] = r0899.6</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.7</td>
<td>1 = Alarm present</td>
<td>p2080[7] = r2139.7</td>
<td>[2548.7]</td>
<td>[8065]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.8</td>
<td>1 = Speed setpoint - actual value deviation within tolerance t_off</td>
<td>p2080[8] = r2179.7</td>
<td>[2534.7]</td>
<td>[8011]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.9</td>
<td>1 = Control requested</td>
<td>p2080[9] = r0899.9</td>
<td>[2503.7]</td>
<td>[2503]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.10</td>
<td>1 = f or n comparison value reached/exceeded</td>
<td>p2080[10] = r2199.1</td>
<td>[2536.7]</td>
<td>[8010]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.11</td>
<td>1 = I, M, or P limit not reached</td>
<td>p2080[11] = r0056.13</td>
<td>[2522.7]</td>
<td>[6060]</td>
<td>✓</td>
</tr>
<tr>
<td>ZSW1.12</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.13</td>
<td>1 = No motor overtemperature alarm</td>
<td>p2080[13] = r2135.14</td>
<td>[2548.7]</td>
<td>[8016]</td>
<td>✓</td>
</tr>
<tr>
<td>ZSW1.14</td>
<td>1 = Motor rotates forwards (n_act ≥ 0)</td>
<td>p2080[14] = r2197.3</td>
<td>[2534.7]</td>
<td>[8011]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.15</td>
<td>1 = Display CDS</td>
<td>p2080[15] = r0836.0</td>
<td>[2548.7]</td>
<td>[8011]</td>
<td>-</td>
</tr>
</tbody>
</table>

<1> Used in telegram 20.
<2> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0..0...p2088[0..15])
<3> The drive object is ready to accept data.
<4> Interconnection is not disabled.
### Signal sources for ZSW1 in Interface Mode SINAMICS (p2038 = 0)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal control word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW1.0</td>
<td>1 = Ready for switching on</td>
<td>p2080[0] = r0899.0</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.1</td>
<td>1 = Ready for operation (DC link loaded, pulses inhibited)</td>
<td>p2080[1] = r0899.1</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.2</td>
<td>1 = Operation enabled (drive follows n_set)</td>
<td>p2080[2] = r0899.2</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.3</td>
<td>1 = Fault present</td>
<td>p2080[3] = r2139.3</td>
<td>[2548.7]</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.4</td>
<td>1 = No coast down active (OFF2 inactive)</td>
<td>p2080[4] = r0899.4</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.5</td>
<td>1 = No fast stop active (OFF3 inactive)</td>
<td>p2080[5] = r0899.5</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.6</td>
<td>1 = Switching on inhibited active</td>
<td>p2080[6] = r0899.6</td>
<td>[2503.7]</td>
<td>Sequence control</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.7</td>
<td>1 = Alarm present</td>
<td>p2080[7] = r2139.7</td>
<td>[2548.7]</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.8</td>
<td>1 = Speed setpoint - actual value deviation within tolerance t_off</td>
<td>p2080[8] = r2197.7</td>
<td>[2534.7]</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.9</td>
<td>1 = Control requested</td>
<td>p2080[9] = r0899.9</td>
<td>[2503.7]</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.10</td>
<td>1 = f or n comparison value reached/exceeded</td>
<td>p2080[10] = r2199.1</td>
<td>[2536.7]</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.11</td>
<td>1 = I, M, or P limit not reached</td>
<td>p2080[11] = r1407.7</td>
<td>[2522.7]</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.12</td>
<td>1 = Open holding brake</td>
<td>p2080[12] = r0899.12</td>
<td>[2503.7]</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.13</td>
<td>1 = No motor overtemperature alarm</td>
<td>p2080[13] = r2135.14</td>
<td>[2548.7]</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.14</td>
<td>1 = Motor rotates forwards (n_act ≥ 0) 0 = Motor rotates backwards (n_act &lt; 0)</td>
<td>p2080[14] = r2197.3</td>
<td>[2534.7]</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.15</td>
<td>1 = No alarm, thermal overload, power unit</td>
<td>p2080[15] = r2135.15</td>
<td>[2548.7]</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

1<sup>1</sup> Used in telegrams 1, 350, 352, 353, 354.  
2<sup>2</sup> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0].0...p2088[0].15)  
3<sup>3</sup> The drive is ready to accept data.
## Signal sources for ZSW3 im Interface Mode SINAMICS (p2038 = 0)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW3.0</td>
<td>$1 = \text{DC brake active}$ $0 = \text{DC brake not active}$</td>
</tr>
<tr>
<td>ZSW3.1</td>
<td>$1 =</td>
</tr>
<tr>
<td>ZSW3.2</td>
<td>$1 =</td>
</tr>
<tr>
<td>ZSW3.3</td>
<td>$1 = l_{act} &gt;= p2170</td>
</tr>
<tr>
<td>ZSW3.4</td>
<td>$1 =</td>
</tr>
<tr>
<td>ZSW3.5</td>
<td>$1 =</td>
</tr>
<tr>
<td>ZSW3.6</td>
<td>$1 =</td>
</tr>
<tr>
<td>ZSW3.7</td>
<td>$1 = V_{dc} &lt;= p2172</td>
</tr>
<tr>
<td>ZSW3.8</td>
<td>$1 = V_{dc} &gt; p2172</td>
</tr>
<tr>
<td>ZSW3.9</td>
<td>$1 = \text{Ramping finished}$</td>
</tr>
<tr>
<td>ZSW3.10</td>
<td>$1 = \text{Techn. contr. out at lower limit}$</td>
</tr>
<tr>
<td>ZSW3.11</td>
<td>$1 = \text{Techn. contr. out at upper limit}$</td>
</tr>
<tr>
<td>ZSW3.12</td>
<td>Reserved</td>
</tr>
<tr>
<td>ZSW3.13</td>
<td>Reserved</td>
</tr>
<tr>
<td>ZSW3.14</td>
<td>Reserved</td>
</tr>
<tr>
<td>ZSW3.15</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

Interconnection parameters:
- [2511.7] $p2038 = 0$

Note: $<1>$ Used in telegrams 350.
In order to maintain the PROFIdrive profile, receive word 1 must be used as control word (STW1) (due to bit 10 "control requested").

Using the connector-biector converters, the bits can be extracted from two of the PZD receive words 3 to 8 and used as biectors.

The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).

The following applies for temperature values: 100° C -> 100 % = 4000 hex, 0° C -> 0 %.

When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.
To comply with the PROFIdrive profile, send word 1 must be used as status word 1 (ZSW1).

Physical word values are inserted in the telegram as referenced variables. p200x apply as reference variables (telegram contents = 4000 hex, if the input variable has the value p200x).

The following applies for temperature values: 100° C -> 100% = 4000 hex; 0° C -> 0%.
5 binector-connector converter

Bin/con ZSW1
\[ p2080 \{0\ldots15\} \]
\[ (0.0) \{1\} \]

Bin/con ZSW inv
\[ p2088 \{0\} \]

Bin/con ZSW send
\[ 2089 \{0\} \]

Bin/con ZSW inv
\[ p2088 \{0\}.15 \]

Bin/con ZSW2
\[ p2081 \{0\ldots15\} \]
\[ (0.0) \{1\} \]

Bin/con ZSW inv
\[ p2088 \{1\}.0 \]

Bin/con ZSW send
\[ 2089 \{1\} \]

Bin/con ZSW inv
\[ p2088 \{1\}.15 \]

Bin/con ZSW3
\[ p2082 \{0\ldots15\} \]
\[ (0.0) \{1\} \]

Bin/con ZSW inv
\[ p2088 \{2\}.0 \]

Bin/con ZSW send
\[ 2089 \{2\} \]

Bin/con ZSW inv
\[ p2088 \{2\}.15 \]

Bin/con ZSW4
\[ p2083 \{0\ldots15\} \]
\[ (0.0) \{1\} \]

Bin/con ZSW inv
\[ p2088 \{3\}.0 \]

Bin/con ZSW send
\[ 2089 \{3\} \]

Bin/con ZSW inv
\[ p2088 \{3\}.15 \]

Bin/con ZSW5
\[ p2084 \{0\ldots15\} \]
\[ (0.0) \{1\} \]

Bin/con ZSW inv
\[ p2088 \{4\}.0 \]

Bin/con ZSW send
\[ 2089 \{4\} \]

Bin/con ZSW inv
\[ p2088 \{4\}.15 \]
2.7 Internal control/status words

Function diagrams

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<th>Description</th>
<th>Page</th>
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<td>2503</td>
<td>Status word, sequence control</td>
<td>2-550</td>
</tr>
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<td>2505</td>
<td>Control word, setpoint channel</td>
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<td>Status word 1 (r0052)</td>
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<td>Status word, closed-loop control</td>
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</tr>
<tr>
<td>2530</td>
<td>Status word, current control</td>
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<td>Status word, monitoring functions 1</td>
<td>2-560</td>
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<tr>
<td>2536</td>
<td>Status word, monitoring functions 2</td>
<td>2-561</td>
</tr>
<tr>
<td>2537</td>
<td>Status word, monitoring functions 3</td>
<td>2-562</td>
</tr>
<tr>
<td>2546</td>
<td>Control word, faults/alarms</td>
<td>2-563</td>
</tr>
<tr>
<td>2548</td>
<td>Status word, faults/alarms 1 and 2</td>
<td>2-564</td>
</tr>
<tr>
<td>2634</td>
<td>Sequence control - Missing enable signals</td>
<td>2-565</td>
</tr>
</tbody>
</table>
**Internal control/status words**

**Function diagrams**

---

**2501 - Control word, sequence control**

---

**Control word, sequence control (r0898)**

- **Bit No.**
  - 0: \( f \) = ON
    - 0 = OFF1 active
    - 1 = Operating condition, no coast down active (OFF2 inactive)
    - 0 = OFF2 active
  - 1 = Operating condition, no fast stop active (OFF3 inactive)
    - 0 = OFF3 active
  - 1 = Enable operation
  - 1 = Enable ramp-function generator
  - 1 = Continue ramp-function generator
  - 0 = Freeze ramp-function generator
  - 1 = Enable speed setpoint
  - 1 = Jog 1
  - 1 = Jog 2
  - 1 = Control via PLC
  - 1 = Reserved
  - 1 = Command open brake
  - 1 = Command close brake
  - 1 = Unconditional open brake
  - 1 = Unconditional close brake
  - 1 = Master control by PLC
  - 1 = Speed controller enable
  - 1 = Command close brake
  - 1 = Reserved

---

**Notes:**

<1> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.

<2> PROFIdrive interconnection: For PROFIdrive standard telegrams, the upper inputs are connected with PROFIdrive-STW1 [2420]. Only relevant for CDS0.

<3> When the master control is retrieved, predefined by STARTER or AOP30.
PROFIdrive-Bit

1 = Ready for switching on

r0899.0

From the control unit

1

1 = Ready for operation (DC link loaded, pulses inhibited)

r0899.1

From the control unit

2

1 = Operation enabled (drive follows n_set)

r0899.2

From the control unit

3

1 = Jog active

r0899.3

From the control unit

4

1 = No coast down active (OFF2 inactive)

r0899.4

From the control unit

5

1 = No fast stop active (OFF3 inactive)

r0899.5

From the control unit

6

1 = Switching on inhibited active

r0899.6

7

1 = Drive ready

r0899.7

From the control unit

8

1 = Controller enable

r0899.8

Bit 9 = 1 --> Ready to exchange process data

9

1 = Control requested

10

Reserved

From the control unit

11

1 = Pulses enabled

r0899.11

From the brake control [2701.8]

12

1 = Open holding brake

r0899.12

From the brake control [2701.8]

13

1 = Command close holding brake

r0899.13

14

Reserved

15

Reserved

OFF1

&
1

OFF3

Enable internal
missing or
fault with
this reaction

<1>

r0899.9

<1> The drive is ready to accept data.

1
2
Internal control/status words
Status word, sequence control

3

4

5

6
fp_2503_97_53.vsd
20.12.2011

V4.5

7
Function diagram
G120 CU240B/E-2

8
- 2503 -

Function diagrams

2503 – Status word, sequence control

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0

OFF3 S_src 2
p0849 [C]
(1)

OFF2

ZSW seq_ctrl
r0899
r0899

Status word sequence control (r0899)

From the control unit

OFF2 S_src 2
p0845 [C]
(1)

Internal control/status words

Fig. 2-42

2-550

Bit No.


Fig. 2-43 2505 – Control word, setpoint channel

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Control word, setpoint channel (r1198)</th>
<th>STW setpoint channel</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = Fixed setpoint, bit 0</td>
<td>r1198.0</td>
</tr>
<tr>
<td>1</td>
<td>1 = Fixed setpoint, bit 1</td>
<td>r1198.1</td>
</tr>
<tr>
<td>2</td>
<td>1 = Fixed setpoint, bit 2</td>
<td>r1198.2</td>
</tr>
<tr>
<td>3</td>
<td>1 = Fixed setpoint, bit 3</td>
<td>r1198.3</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1 = Inhibit negative direction of rotation</td>
<td>r1198.5</td>
</tr>
<tr>
<td>6</td>
<td>1 = Inhibit positive direction of rotation</td>
<td>r1198.6</td>
</tr>
<tr>
<td>7</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1 = Setpoint inversion</td>
<td>r1198.11</td>
</tr>
<tr>
<td>12</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>1 = Motorized potentiometer, raise</td>
<td>r1198.13</td>
</tr>
<tr>
<td>14</td>
<td>1 = Motorized potentiometer, lower</td>
<td>r1198.14</td>
</tr>
<tr>
<td>15</td>
<td>1 = Bypass ramp-function generator</td>
<td>r1198.15</td>
</tr>
</tbody>
</table>

Control word, setpoint channel

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal control/status words</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Control word, setpoint channel</td>
<td></td>
</tr>
<tr>
<td>fp_2505_97_51.vsd</td>
<td>Function diagram</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20.12.2011 V4.5</td>
<td>G120 CU240B/E-2</td>
</tr>
</tbody>
</table>
Fig. 2-44 2510 – Status word 1 (r0052)

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Status word 1 (r0052)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Drive ready for switching on</td>
</tr>
<tr>
<td>1</td>
<td>Drive fault present (pulses inhibited)</td>
</tr>
<tr>
<td>2</td>
<td>Operation enabled / pulse enable (voltage at output terminals)</td>
</tr>
<tr>
<td>3</td>
<td>Drive ready for operation (DC link loaded, pulses inhibited)</td>
</tr>
<tr>
<td>4</td>
<td>Fast down active (OFF2 active)</td>
</tr>
<tr>
<td>5</td>
<td>Fast stop active (OFF3 active)</td>
</tr>
<tr>
<td>6</td>
<td>Switching on inhibited active</td>
</tr>
<tr>
<td>7</td>
<td>Alarm present</td>
</tr>
<tr>
<td>8</td>
<td>Deviation setpoint / actual speed</td>
</tr>
<tr>
<td>9</td>
<td>Control request</td>
</tr>
<tr>
<td>10</td>
<td>Maximum speed reached (f_act &gt;= p1082 (f_max))</td>
</tr>
<tr>
<td>11</td>
<td>Limit not reached</td>
</tr>
<tr>
<td>12</td>
<td>Open motor holding brake</td>
</tr>
<tr>
<td>13</td>
<td>Alarm motor overtemperature</td>
</tr>
<tr>
<td>14</td>
<td>Motor rotates right</td>
</tr>
<tr>
<td>15</td>
<td>Alarm drive converter overload</td>
</tr>
</tbody>
</table>

Signal "Fault active" is inverted if connected to a digital output which means that the relay will be in the de-energised state.

<1> r0052.3 displays status bit r2139.3 or r1214.10, if p1210 > 0
### Status word 2 (r0053)

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Status word 2 (r0053)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = DC brake active 0 = DC brake not active</td>
</tr>
<tr>
<td>1</td>
<td>1 =</td>
</tr>
<tr>
<td>2</td>
<td>1 =</td>
</tr>
<tr>
<td>3</td>
<td>1 = l_act &gt;= p2170</td>
</tr>
<tr>
<td>4</td>
<td>1 =</td>
</tr>
<tr>
<td>5</td>
<td>1 =</td>
</tr>
<tr>
<td>6</td>
<td>1 =</td>
</tr>
<tr>
<td>7</td>
<td>1 = Vdc &lt;= p2172</td>
</tr>
<tr>
<td>8</td>
<td>1 = Vdc &gt; p2172</td>
</tr>
<tr>
<td>9</td>
<td>1 = Ramping finished</td>
</tr>
<tr>
<td>10</td>
<td>1 = Techn. contr. out at lower limit</td>
</tr>
<tr>
<td>11</td>
<td>1 = Techn. contr. out at upper limit</td>
</tr>
<tr>
<td>12</td>
<td>Reserved</td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

#### Function diagram

- **DCBRK ZSW**
- **ZSW monitor 1**
- **ZSW monitor 1**
- **ZSW monitor 1**
- **ZSW monitor 1**
- **ZSW monitor 1**
- **ZSW monitor 1**
- **ZSW monitor 1**
- **ZSW monitor 1**
- **ZSW monitor 1**
- **RFG ZSW**
- **Tec_ctrl status**
- **Tec_ctrl status**

---

**Fig. 2-45**

2511 – Status word 2 (r0053)
Fig. 2-46  2512 – Control word 1 (r0054)

**Function Diagram**

- **Bit No.**
  - 0 = OFF1, Shutdown via ramp, followed by pulse inhibit
  - 1 = OFF, operating condition (edge-controlled)
  - 2 = OFF2: Electrical stop, pulse inhibit, motor coasts down
  - 3 = Operation enable
  - 4 = Ramp-function generator enable
  - 5 = Continue ramp-function generator
  - 6 = Speed setpoint enable
  - 7 = Acknowledge fault
  - 8 = Jog bit 0
  - 9 = Jog bit 1
  - 10 = Master ctrl by PLC
  - 11 = Directions reversal (setpoint)
  - 12 = Reserved
  - 13 = Motorized potentiometer raise
  - 14 = Motorized potentiometer lower
  - 15 = CDS bit 0

**Internal Control/Status Words**

- OFF1: Shutdown via ramp, followed by pulse inhibit
- OFF2: Electrical stop, pulse inhibit, motor coasts down
- Operation enable
- Ramp-function generator enable
- Continue ramp-function generator
- Speed setpoint enable
- Acknowledge fault
- Jog bit 0
- Jog bit 1
- Master ctrl by PLC
- Directions reversal (setpoint)

**Control Events**

- All bits = 1 --> drive runs
Control word 2 (r0055)

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Control word 2 (r0055)</th>
<th>Suppl STW</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = Fixed setp bit 0</td>
<td>r0055</td>
</tr>
<tr>
<td>1</td>
<td>1 = Fixed setp bit 1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1 = Fixed setp bit 2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1 = Fixed setp bit 3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1 = DDS select. bit 0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1 = DDS select. bit 1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1 = Technology controller enable</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1 = DC brake enable</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1 = Droop enable</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>1 = Torque control active</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>0 = External fault 1 (F07860)</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1 = CDS bit 1</td>
<td></td>
</tr>
</tbody>
</table>

Internal control/status words

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<td>- 2513 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Control word 2</td>
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<td>G120 CU240B/E-2</td>
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<td></td>
<td></td>
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</tr>
</tbody>
</table>
Fig. 2-48  2520 – Control word, speed controller

### Control word, speed controller (r1406)

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Reserved</td>
</tr>
<tr>
<td>1</td>
<td>Reserved</td>
</tr>
<tr>
<td>2</td>
<td>Reserved</td>
</tr>
<tr>
<td>3</td>
<td>Reserved</td>
</tr>
<tr>
<td>4</td>
<td>1 = speed controller, hold I component</td>
</tr>
<tr>
<td>5</td>
<td>1 = speed controller, set I component</td>
</tr>
<tr>
<td>6</td>
<td>Reserved</td>
</tr>
<tr>
<td>7</td>
<td>Reserved</td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
</tr>
<tr>
<td>10</td>
<td>Reserved</td>
</tr>
<tr>
<td>11</td>
<td>1 = Droop enable</td>
</tr>
<tr>
<td>12</td>
<td>1 = Closed-loop torque control active</td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>1 = Speed adaption controller set I-comp.</td>
</tr>
</tbody>
</table>

**Internal control/status words**

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1406.1</td>
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</tr>
<tr>
<td>1406.2</td>
<td>Reserved</td>
</tr>
<tr>
<td>1406.3</td>
<td>Reserved</td>
</tr>
<tr>
<td>1406.4</td>
<td>To the speed controller [6040.4]</td>
</tr>
<tr>
<td>1406.5</td>
<td>To the speed controller [6040.4]</td>
</tr>
<tr>
<td>1406.6</td>
<td>Reserved</td>
</tr>
<tr>
<td>1406.7</td>
<td>Reserved</td>
</tr>
<tr>
<td>1406.8</td>
<td>Reserved</td>
</tr>
<tr>
<td>1406.9</td>
<td>Reserved</td>
</tr>
<tr>
<td>1406.10</td>
<td>Reserved</td>
</tr>
<tr>
<td>1406.11</td>
<td>To the speed setpoint, droop [6030.1]</td>
</tr>
<tr>
<td>1406.12</td>
<td>To the closed-loop speed control [6060.1]</td>
</tr>
<tr>
<td>1406.13</td>
<td>Reserved</td>
</tr>
<tr>
<td>1406.14</td>
<td>Reserved</td>
</tr>
<tr>
<td>1406.15</td>
<td>Reserved</td>
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</table>

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<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1406</td>
<td>STW n_ctrl</td>
</tr>
<tr>
<td>r1406</td>
<td></td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Internal control/status words</th>
<th>fp_2520_97_53.vsd</th>
<th>Function diagram</th>
<th>- 2520 -</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control word, speed controller</td>
<td>20.12.2011 V4.5</td>
<td>G120 CU240B/E-2</td>
<td></td>
</tr>
</tbody>
</table>
Status word, speed controller (r1407)

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Status word, speed controller (r1407)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = U/f control active</td>
</tr>
<tr>
<td>1</td>
<td>1 = Sensorless operation active</td>
</tr>
<tr>
<td>2</td>
<td>1 = Closed-loop torque control active</td>
</tr>
<tr>
<td>3</td>
<td>1 = Closed-loop speed control active</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
</tr>
<tr>
<td>5</td>
<td>1 = Speed controller, I component held</td>
</tr>
<tr>
<td>6</td>
<td>1 = Speed controller, I component set</td>
</tr>
<tr>
<td>7</td>
<td>1 = Torque limit reached</td>
</tr>
<tr>
<td>8</td>
<td>1 = Torque limiting, upper, active</td>
</tr>
<tr>
<td>9</td>
<td>1 = Torque limiting, lower, active</td>
</tr>
<tr>
<td>10</td>
<td>1 = Droop enabled</td>
</tr>
<tr>
<td>11</td>
<td>1 = Speed setpoint limited</td>
</tr>
<tr>
<td>12</td>
<td>1 = Ramp-function generator set</td>
</tr>
<tr>
<td>13</td>
<td>1 = Sensorless operation due to a fault</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>1 = Torque limit reached (without pre-control)</td>
</tr>
</tbody>
</table>

From the changeover, closed-loop control types

- 1 = Torque control
- Sensorless operation

From the control unit

- ZSW n_ctrl
- STW n_ctrl

From the speed controller (6040.7)

- To speed setpoint, droop [6030.5]
- To torque setpoint [6060.3]

From the speed setpoint, droop

- [6030.3] [6030.4]
- [6030.5]

From the torque setpoint

- [6060.3] [6060.4] [6060.5]

From the torque setpoint [6060.7]

- Ramp-function generator tracking [3080.1]
- Speed controller [6040.4]
- Motor locked/stalled [8012.5]
Function diagrams

Fig. 2-50  2526 – Status word, closed-loop control

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Status word closed-loop control (r0056)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = Initialization completed</td>
</tr>
<tr>
<td>1</td>
<td>1 = De-magnetization completed</td>
</tr>
<tr>
<td>2</td>
<td>1 = Pulses enabled</td>
</tr>
<tr>
<td>3</td>
<td>1 = Soft starting available</td>
</tr>
<tr>
<td>4</td>
<td>1 = Magnetization available</td>
</tr>
<tr>
<td>5</td>
<td>1 = Starting boost active</td>
</tr>
<tr>
<td>6</td>
<td>1 = Acceleration voltage active</td>
</tr>
<tr>
<td>7</td>
<td>1 = Frequency, negative</td>
</tr>
<tr>
<td>8</td>
<td>1 = Field weakening active</td>
</tr>
<tr>
<td>9</td>
<td>1 = Voltage limit active</td>
</tr>
<tr>
<td>10</td>
<td>1 = Slip limiting active</td>
</tr>
<tr>
<td>11</td>
<td>1 = Frequency limit active</td>
</tr>
<tr>
<td>12</td>
<td>1 = Current limiting controller, voltage output active</td>
</tr>
<tr>
<td>13</td>
<td>1 = Current/torque limiting active</td>
</tr>
<tr>
<td>14</td>
<td>1 = Vdc_max controller active</td>
</tr>
<tr>
<td>15</td>
<td>1 = Vdc_min controller active</td>
</tr>
</tbody>
</table>

<1> Only for U/f control

<2> Only for Power Modules PM230/PM240

<3> Only for Power Modules PM240 and for PM230 with Vector Control

1  2  3  4  5  6  7  8
| Internal control/status words | fp_2526_97_63.vsd | 20.12.2011 V4.5 | G120 CU240B/E-2 | - 2526 - |
Fig. 2-51
2530 – Status word, current control

Status word closed-loop current control (r1408)

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Status word closed-loop current control (r1408)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = Closed-loop current control active</td>
</tr>
<tr>
<td>1</td>
<td>1 = Id controller I comp. limitation</td>
</tr>
<tr>
<td>2</td>
<td>Reserved</td>
</tr>
<tr>
<td>3</td>
<td>1 = Voltage limitation</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
</tr>
<tr>
<td>5</td>
<td>Reserved</td>
</tr>
<tr>
<td>6</td>
<td>Reserved</td>
</tr>
<tr>
<td>7</td>
<td>Reserved</td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
</tr>
<tr>
<td>10</td>
<td>1 = Speed adaption limitation</td>
</tr>
<tr>
<td>11</td>
<td>Reserved</td>
</tr>
<tr>
<td>12</td>
<td>1 = Motor stalled</td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

ZSW I_ctrl

<table>
<thead>
<tr>
<th>7408.0</th>
<th>7408.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>7408.2</td>
<td>7408.3</td>
</tr>
<tr>
<td>7408.4</td>
<td>7408.5</td>
</tr>
<tr>
<td>7408.6</td>
<td>7408.7</td>
</tr>
<tr>
<td>7408.8</td>
<td>7408.9</td>
</tr>
</tbody>
</table>

ZSW monitor 2

<table>
<thead>
<tr>
<th>r2198</th>
<th>r2198.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>[6714.5]</td>
<td>[6714.8]</td>
</tr>
</tbody>
</table>

Status word, current control

<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>2530</td>
<td>Internal control/status words</td>
<td>fp_2530_97_64.vsd</td>
<td>Function diagram</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Status word, current control</td>
<td>20.12.2011 V4.5</td>
<td>G120 CU240B/E-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Status word, monitoring functions 1 (r2197)

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 =</td>
</tr>
<tr>
<td>1</td>
<td>1 =</td>
</tr>
<tr>
<td>2</td>
<td>1 =</td>
</tr>
<tr>
<td>3</td>
<td>1 =</td>
</tr>
<tr>
<td>4</td>
<td>1 =</td>
</tr>
<tr>
<td>5</td>
<td>1 =</td>
</tr>
<tr>
<td>6</td>
<td>1 =</td>
</tr>
<tr>
<td>7</td>
<td>1 = Speed setpoint - actual value deviation within tolerance t_off</td>
</tr>
<tr>
<td>8</td>
<td>1 = I_act &gt;= I_threshold p2170</td>
</tr>
<tr>
<td>9</td>
<td>1 = Vdc_act &lt;= Vdc_threshold p2172</td>
</tr>
<tr>
<td>10</td>
<td>1 = Vdc_act &gt; Vdc_threshold p2172</td>
</tr>
<tr>
<td>11</td>
<td>1 = Load missing</td>
</tr>
<tr>
<td>12</td>
<td>1 =</td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

<n> n_act = smoothed speed actual value r2169 [8010.2].
### Status word, monitoring functions 2 (r2198)

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Motor blocked</td>
</tr>
<tr>
<td>7</td>
<td>Motor stalled</td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Load monitoring signals an alarm</td>
</tr>
<tr>
<td>12</td>
<td>Load monitoring signals a fault</td>
</tr>
<tr>
<td>13</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

### From extended signals
- [0021.8]:
  - Bit 0: |n_act| <= speed threshold 5
  - Bit 1: |n_act| > speed threshold 5
- [0021.8]:
  - Bit 2: |n_act| <= speed threshold 6
  - Bit 3: |n_act| > speed threshold 6
- [0021.8]:
  - Bit 4: |I_act| < I_threshold p2170
  - Bit 5: |M_act| > torque threshold 1 and n_set reached
- [0021.8]:
  - Bit 6: Motor blocked
  - Bit 7: Motor stalled
- [0021.8]:
  - Bit 8: |I_act| < I_threshold p2170
  - Bit 9: |M_act| > torque threshold 1 and n_set reached
- [0021.8]:
  - Bit 10: |M_set| < torque threshold 1 (p2174)
  - Bit 11: Load monitoring signals an alarm
  - Bit 12: Load monitoring signals a fault
  - Bit 13: |M_set| < torque threshold 1 (p2174)
  - Bit 14: Reserved
  - Bit 15: Reserved
Bit No. | Status word, monitoring functions 3 (r2199)
--- | ---
0 | \(1 = |n_{\text{act}}| < \text{speed threshold value 3 (p2161)}\)
1 | \(1 = f \text{ or } n \text{ comparison value reached or exceeded (p2141)}\)
2 | Reserved
3 | Reserved
4 | \(1 = \text{Speed setpoint - actual value deviation within tolerance } t_{\text{on}}\)
5 | \(1 = \text{Ramp-up/ramp-down completed }
0 = \text{Ramp-function generator active}\)
6 | Reserved
7 | Reserved
8 | Reserved
9 | Reserved
10 | Reserved
11 | \(1 = \text{Torque utilization } < \text{torque threshold value 2 (p2194)}\)
12 | Reserved
13 | Reserved
14 | Reserved
15 | Reserved

\(<1>\ n_{\text{act}} = \text{smoothed speed actual value r2169 [8010.2]}\)
Internal control/status words

Control word, faults/alarms

Bit No. | Control word, faults/alarms
---|---
0 | Reserved
1 | Reserved
2 | Reserved
3 | Reserved
4 | Reserved
5 | Reserved
6 | Reserved
7 | Reserved
8 | Reserved
9 | Reserved
10 | External alarm 1 (A07850)
11 | External alarm 2 (A07851)
12 | External alarm 3 (A07852)
13 | External fault 1 (F07860)
14 | External fault 2 (F07861)
15 | External fault 3 (F07862)

STW fault/alarms

Fig. 2-55
2546 – Control word, faults/alarms

Internal control/status words

Function diagrams

Fig. 2-55
2546 – Control word, faults/alarms

1. Acknowledge
2. Acknowledge
3. Acknowledge

External alarm 1
External alarm 2
External alarm 3

External fault 1
External fault 2
External fault 3

STW fault/alarms

1. Acknowledge
2. Acknowledge
3. Acknowledge

External fault 3
Ext fault 3 enab
Ext fault 3 enab neg

Ext fault 3 on 0 ... 1000 [ms]

<1> These parameters refer to the Command Data Sets (CDS).

Function diagram

fp_2546_97_51.vsd

G120 CU240B/E-2

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**Status word, faults/alarms 1**

- **Bit No.**
  - 0: 1 = Acknowledgement running
  - 1, 2: Reserved
  - 3: 1 = Fault present
  - 4, 5: Reserved
  - 6: 1 = Internal signal 1 present
  - 7: 1 = Alarm present
  - 8: 1 = Internal signal 2 present
  - 9, 10: Reserved
  - 11: Alarm class bit 0
  - 12: Alarm class bit 1
  - 13 - 15: Reserved

**Status word, faults/alarms 2**

- **Bit No.**
  - 0: Reserved
  - 11: Reserved
  - 12: 1 = Fault motor overtemperature
  - 13: 1 = Fault, thermal overload, power module
  - 14: 1 = Alarm motor overtemperature
  - 15: 1 = Alarm, thermal overload, power module

**Internal control/status words**

| No. | Status word, faults/alarms 1 | 00 | 01 | 10 | 11 | 000 | 001 | 010 | 011 | 100 | 101 | 110 | 111 | 0000 | 0001 | 0010 | 0011 | 0100 | 0101 | 0110 | 0111 | 1000 | 1001 | 1010 | 1011 | 1100 | 1101 | 1110 | 1111 |
|-----|-------------------------------|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0   | 1 = Acknowledgement running   |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 1, 2| Reserved                      |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 3   | 1 = Fault present             |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 4, 5| Reserved                      |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 6   | 1 = Internal signal 1 present |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 7   | 1 = Alarm present             |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 8   | 1 = Internal signal 2 present |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 9, 10| Reserved                      |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 11  | Alarm class bit 0             |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 12  | Alarm class bit 1             |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 13 - 15| Reserved                      |    |    |    |    |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

**ZSW fault/alarms 1**

- ZSW fault/alarm 1

**ZSW fault/alarms 2**

- ZSW fault/alarm 2

---

**Function diagrams**

- Fig. 2-56 2548 – Status word, faults/alarms 1 and 2

---

**Internal control/status words**

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**Status word, faults/alarms 1 and 2**

- G120 CU240B/E-2
**Fig. 2-57**

Sequence control - Missing enable signals

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Missing enable signals (r0046)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = OFF1 enable missing</td>
</tr>
<tr>
<td>1</td>
<td>1 = OFF2 enable missing</td>
</tr>
<tr>
<td>2</td>
<td>1 = OFF3 enable missing</td>
</tr>
<tr>
<td>3</td>
<td>1 = Operation enable missing</td>
</tr>
<tr>
<td>4</td>
<td>1 = DC current brake, enable missing</td>
</tr>
<tr>
<td>...</td>
<td>Reserved</td>
</tr>
<tr>
<td>10</td>
<td>1 = Ramp-function generator enable missing</td>
</tr>
<tr>
<td>11</td>
<td>1 = Ramp-function generator start missing</td>
</tr>
<tr>
<td>12</td>
<td>1 = Setpoint enable missing</td>
</tr>
<tr>
<td>...</td>
<td>Reserved</td>
</tr>
<tr>
<td>16</td>
<td>1 = OFF1 enable internal missing</td>
</tr>
<tr>
<td>17</td>
<td>1 = OFF2 enable internal missing</td>
</tr>
<tr>
<td>18</td>
<td>1 = OFF3 enable internal missing</td>
</tr>
<tr>
<td>19</td>
<td>1 = Pulse enable internal missing</td>
</tr>
<tr>
<td>20</td>
<td>1 = DC current brake, internal enable missing</td>
</tr>
<tr>
<td>21</td>
<td>1 = PU enable missing</td>
</tr>
<tr>
<td>...</td>
<td>Reserved</td>
</tr>
<tr>
<td>26</td>
<td>1 = Drive inactive or not operational</td>
</tr>
<tr>
<td>27</td>
<td>1 = De-magnetizing not completed</td>
</tr>
<tr>
<td>28</td>
<td>1 = Brake open missing</td>
</tr>
<tr>
<td>...</td>
<td>Reserved</td>
</tr>
<tr>
<td>30</td>
<td>1 = Speed controller inhibited</td>
</tr>
<tr>
<td>31</td>
<td>1 = Jog setpoint active</td>
</tr>
</tbody>
</table>

**Function diagrams**

- [fp_2634_97_61.vsd](#)  
  - Function diagram
  - Sequence control - Missing enable signals
  - G120 CU240B/E-2
2.8 Brake control

Function diagrams

2701 – Basic brake control
Brake control

Function diagrams

2-567

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SINAMICS G120 CU240B/E-2 Control Units List Manual (LH11), 01/2012

Fig. 2-58 2701 – Basic brake control

Braking Control

G120 CU240B/E-2

For p1227 = 300 s, the monitoring function is deactivated.

<8> If an external motor holding brake is used, p1215 should be set to 3 and r0899.12 should be interconnected as control signal.

<7> r046.21 = 0, as long as r046.0 = 1 (OFF1 enable missing or switching on inhibited).
The signal generation is shown simplified.

<9> The internal signal includes signals that lead to OFF1 or OFF3 (e. g. BICO or fault response).

<10> Start frequency with U/f control: p1351, p1352; Start torque with vector control: p1475.
# Function diagrams

## 2.9 Safety Integrated

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
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<td>Basic functions, parameter manager</td>
<td>2-569</td>
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<tr>
<td>2802</td>
<td>Basic functions, monitoring functions and faults/alarms</td>
<td>2-570</td>
</tr>
<tr>
<td>2804</td>
<td>Basic functions, status words</td>
<td>2-571</td>
</tr>
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<td>2810</td>
<td>Basic functions, STO: Safe Torque Off</td>
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<tr>
<td>2812</td>
<td>Basic functions, F-DI: Fail-safe digital input</td>
<td>2-573</td>
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<tr>
<td>2820</td>
<td>SI Motion, SLS: Safely-Limited Speed</td>
<td>2-574</td>
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<tr>
<td>2825</td>
<td>SI Motion, SS1: Safe Stop 1, internal STOP A, B, F</td>
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<td>2840</td>
<td>SI Motion, PROFlsafe control and status word</td>
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<td>2846</td>
<td>SI Motion, parameter manager</td>
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<tr>
<td>2850</td>
<td>SI Motion, fail-safe digital inputs (F-DI0 ... F-DI2)</td>
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<td>2855</td>
<td>SI Motion, F-DI assignment</td>
<td>2-579</td>
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<td>2858</td>
<td>SI Motion, extended functions via PROFlsafe (9601.2 = 1 and 9601.3 = 1)</td>
<td>2-580</td>
</tr>
<tr>
<td>2860</td>
<td>SI Motion, SSM (Safe Speed Monitor)</td>
<td>2-581</td>
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<tr>
<td>2861</td>
<td>SI Motion, SDI (Safe Direction)</td>
<td>2-582</td>
</tr>
</tbody>
</table>
### Changing safety parameters

1. Safety Integrated commissioning
   - p0010 = 95
   - SI password inp p9761
   - SI password new p9762
   - SI ackn password p9763

2. Safety parameterizing enable
   - Enter password
   - Effective password
   - SET y = x

3. Safety parameters p9601 ... p9899 can be changed
   - Comparator, refer to [1021]
   - Analog signal memory, refer to [1021]
   - The target checksum must be equal to the actual checksum.

4. Checksum check for safety parameters
   - SI act chksm P1 p9798
   - SI setp chksm P1 p9799

5. Safety parameters p9601 ... p9899 are valid

### Resetting safety parameters

6. Inhibit safety functions
   - SI enable fct P1 p9801 = 0
   - [2810.3]
   - SI enable fct P2 p9801 = 0
   - [2810.3]

7. Safety parameters p9601 ... p9899 can be reset to the factory settings via p0970, p3900

8. Exit safety commissioning mode
   - p0010 unequal 95

---

<1> Comparator, refer to [1021]

<2> Analog signal memory, refer to [1021]

<3> The target checksum must be equal to the actual checksum.

<**> Valid for all CU240E-2 variants
Safety monitoring functions

Faults/alarms
P1: F/A01600 .. 01699
P2: F/A30600 .. 30699

Additional diagnostic information
SI CDC_list P1 r9794

Cross checking list

SI mon clk cyc P1 [ms] r9780

Monitoring clock cycle

Safety Integrated version
SI versionDrv P1 r9770

STOP F

F01611
F30611

1 = Faults with response "NONE"

1 = Faults with response "immediate pulse suppression"
That cannot be acknowledged

≥1

SI status P1 [2804.2]

SI status P2 [2804.5]

1 = STOP A
To Safe Torque Off [2810.3]

≥1

F01600/F30600
"STOP A initiated"

SI Status P1 [2804.2]

SI Status P2 [2804.5]

SI mon_clk cyc P1 [ms] r9780

Function diagrams

Fig. 2-60 2802 – Basic functions, monitoring functions and faults/alarms

1 2 3 4 5 6 7 8

Safety Integrated
Basic Functions, Monitoring functions and faults/alarms

fp_2802_97_63.vsd

Function diagram

G120 CU240E-2 <**>


<<**> Valid for all CU240E-2 variants

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SINAMICS G120 CU240E-2 Control Units List Manual (LH11), 01/2012
### Status word Safety Integrated Processor 1

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Status (Processor 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[2810.4]</td>
<td>0 = STO selected on Processor 1</td>
</tr>
<tr>
<td>[2810.7]</td>
<td>1 = STO active on Processor 1</td>
</tr>
<tr>
<td>...</td>
<td>Reserved</td>
</tr>
<tr>
<td>[2802.7]</td>
<td>9 = STOP A cannot be acknowledged, active</td>
</tr>
<tr>
<td>[2802.8]</td>
<td>10 = STOP A active</td>
</tr>
<tr>
<td>...</td>
<td>Reserved</td>
</tr>
<tr>
<td>[2802.5]</td>
<td>15 = STOP F active</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>16 = STO cause: Safety commissioning mode</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>17 = STO cause: selection via terminal</td>
</tr>
<tr>
<td>[2825.6]</td>
<td>18 = STO cause: selection via SMM</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>19 = STO cause: actual value missing</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>20 = STO cause: selection PROFIsafe</td>
</tr>
</tbody>
</table>

### Status word Safety Integrated Processor 2

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Status (Processor 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[2810.4]</td>
<td>0 = STO selected on Processor 2</td>
</tr>
<tr>
<td>[2810.6]</td>
<td>1 = STO active on Processor 2</td>
</tr>
<tr>
<td>...</td>
<td>Reserved</td>
</tr>
<tr>
<td>[2802.7]</td>
<td>9 = STOP A cannot be acknowledged, active</td>
</tr>
<tr>
<td>[2802.8]</td>
<td>10 = STOP A active</td>
</tr>
<tr>
<td>...</td>
<td>Reserved</td>
</tr>
<tr>
<td>[2802.5]</td>
<td>15 = STOP F active</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>16 = STO cause: Safety commissioning mode</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>17 = STO cause: selection via terminal</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>18 = STO cause: selection via SMM</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>19 = STO cause: actual value missing</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>20 = STO cause: selection PROFIsafe</td>
</tr>
</tbody>
</table>

### Status word Safety Integrated Processor 1 and Processor 2

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Status (Processor 1 + Processor 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[2810.4]</td>
<td>0 = STO selected in drive</td>
</tr>
<tr>
<td>[2810.5]</td>
<td>1 = STO active in drive</td>
</tr>
<tr>
<td>...</td>
<td>Reserved</td>
</tr>
<tr>
<td>[2802.7]</td>
<td>9 = STOP A cannot be acknowledged, active</td>
</tr>
<tr>
<td>[2802.8]</td>
<td>10 = STOP A active</td>
</tr>
<tr>
<td>...</td>
<td>Reserved</td>
</tr>
<tr>
<td>[2802.5]</td>
<td>15 = STOP F active</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>16 = STO cause: Safety commissioning mode</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>17 = STO cause: selection via terminal</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>18 = STO cause: selection via SMM</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>19 = STO cause: actual value missing</td>
</tr>
<tr>
<td>[2810.2]</td>
<td>20 = STO cause: selection PROFIsafe</td>
</tr>
</tbody>
</table>

### SI status P1

- r9772
- [2810.4]
- [2810.7]
- ... Reserved
- [2802.7]
- [2802.8]
- ... Reserved
- [2802.5]
- [2810.2]
- [2825.6]
- [2810.2]

### SI status P2

- r9872
- [2810.4]
- [2810.6]
- ... Reserved
- [2802.7]
- [2802.8]
- ... Reserved
- [2802.5]
- [2810.2]
- [2825.6]
- [2810.2]

### SI status P1+P2

- r9773
- [2810.4]
- [2810.5]
- ... Reserved
- [2802.7]
- [2802.8]
- ... Reserved
- [2802.5]
- [2810.2]
- [2825.6]
- [2810.2]
Fig. 2-63  2012 – Basic functions, F-DI: Fail-safe Digital Input

-2812-
**Function diagrams**

**Safety Integrated CU240E-2_F/DP_F**


SI Motion, SLS: Safely-Limited Speed

<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>Safety Integrated</td>
<td>fp_2820_97_53.vsd</td>
<td>Function diagram</td>
<td>- 2820 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SI Motion, SLS: Safely-Limited Speed**

**Fig. 2-64**

- Safe brake-ramp monitoring
- Safe speed monitoring
- Safe acceleration monitoring

**Parameters**

- **SI Mtn integ STW**: 2858.3
- **SI Mtn SLS lim P1**: 0.01 ... 100000.00 [rpm]
- **SI Mtn SLS lim P2**: 0.01 ... 100000.00 [rpm]
- **SI Mtn gear num P1**: 1 ... 2147000000
- **SI Mtn gear den P1**: 1 ... 2147000000
- **SI Mtn gear num P2**: 1 ... 2147000000
- **SI Mtn gear den P2**: 1 ... 2147000000

**Additional Notes**

- **<1>** With p9306/p9506 = 3
- **<2>** With p9306/p9506 = 1
- **<3>** This applies to activation via PROFIsafe (p9601.2 = 1, p9601.3 = 0).
- **<4>** This applies to activation via F-DI (p9601.2 = 1, p9601.3 = 0).

**Conversion load side --> motor side**

**References**

- p9306/p9506
- p9321/p9521
- p9322/p9522
- p9331/p9531
- p9381/p9581
- p9382/p9582
- p9383/p9583
- p9531/p9533
- p9551/p9581
- p9582/p9583
- p9601.2/p9601.3
- p9601.2/p9601.3
- p1082/D
- p9933[0..2]
Fig. 2-65  
2825 - SI Motion, SS1: Safe Stop 1, Internal STOP A, B, F

<1> This applies to activation via F-DI (p9601.2 = 1, p9601.3 = 0).
<2> This applies to activation via PROFIsafe (p9601.2 = 1, p9601.3 = 1).

<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>Safety Integrated</td>
<td>SI Motion, SS1: Safe Stop 1, Internal STOP A, B, F</td>
<td>fp_2825_97_53.vsd</td>
<td>Function diagram</td>
<td>- 2825 -</td>
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<td></td>
<td></td>
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<tr>
<td>20.12.2011 V4.5</td>
<td>CU240E-2_F/DP_F</td>
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<td></td>
</tr>
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</table>
Fig. 2-66 2840 – SI Motion, PROFIsafe control and status word

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Control word</th>
<th>Bit No.</th>
<th>Status word</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = STO deselection</td>
<td>0</td>
<td>1 = SLO active</td>
</tr>
<tr>
<td>1</td>
<td>1 = SSI deselection</td>
<td>1</td>
<td>1 = SSI active</td>
</tr>
<tr>
<td>2</td>
<td>Reserved</td>
<td>2</td>
<td>Reserved</td>
</tr>
<tr>
<td>3</td>
<td>Reserved</td>
<td>3</td>
<td>Reserved</td>
</tr>
<tr>
<td>4</td>
<td>1 = SLS deselection</td>
<td>4</td>
<td>1 = SLS active</td>
</tr>
<tr>
<td>5</td>
<td>Reserved</td>
<td>5</td>
<td>Reserved</td>
</tr>
<tr>
<td>6</td>
<td>Reserved</td>
<td>6</td>
<td>Reserved</td>
</tr>
<tr>
<td>7</td>
<td>1/0 = Acknowledgement</td>
<td>7</td>
<td>1 = Not an internal event</td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
<td>8</td>
<td>Reserved</td>
</tr>
<tr>
<td>9</td>
<td>1 = SLS selection bit 0 active</td>
<td>9</td>
<td>1 = Active SLS stage, bit 0</td>
</tr>
<tr>
<td>10</td>
<td>1 = SLS selection bit 1 active</td>
<td>10</td>
<td>1 = Active SLS stage, bit 1</td>
</tr>
<tr>
<td>11</td>
<td>Reserved</td>
<td>11</td>
<td>Reserved</td>
</tr>
<tr>
<td>12</td>
<td>Deselect SDI positive</td>
<td>12</td>
<td>1 = SDI positive active</td>
</tr>
<tr>
<td>13</td>
<td>Deselect SDI negative</td>
<td>13</td>
<td>1 = SDI negative active</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
<td>14</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>1 = SSM (Speed below limit)</td>
<td>15</td>
<td>1 = SSM (Speed below limit)</td>
</tr>
</tbody>
</table>

<1> This applies to activation via F-DI (p9601.2 = 1, p9601.3 = 0).
<2> This applies to activation via PROFIsafe (p9601.2 = 1, p9601.3 = 1).
<3> Reserved for activation via F-DI.
Changing safety parameters

Safety parameter enable

Enter password

Effective password

Changing safety parameters

Safety parameter p9300 ... p9399
p9500 ... p9599
p10002 ... p10152

Safety parameter can be changed

Checksum check for safety parameters

Safety parameters p9300 ... p9399
p9500 ... p9599
p10002 ... p10152
are valid after save.
STARTER issues a message if a POWER ON is required

Resetting safety parameters

Inhibit safety functions

p9301 = 0

p9501 = 0

p9801 = 0

p10002 = 0

p10152 = 0

Safety parameter can be reset to factory settings via p0970, p3900

<1> Comparator, refer to [1021]
<2> Analog signal memory, refer to [1021]
<3> The target checksum must be equal to the actual checksum.

Safety Integrated

SI Motion, Parameter Manager

Function diagram - 2846 -
Fig. 2-68  2850 – SI Motion, fail-safe digital inputs (F-DI0 ... F-DI2)

<p>| | | | | | | | |</p>
<table>
<thead>
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<td>3</td>
<td>4</td>
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<td></td>
<td>fp_2850_97_53.vsd</td>
<td>Function diagram</td>
<td>- 2850 -</td>
</tr>
<tr>
<td>SI Motion, Fail-safe Digital Inputs (F-DI0 ... F-DI2)</td>
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<td></td>
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</tbody>
</table>

SINAMICS G120 CU240B/E-2 Control Units  List Manual (LH11), 01/2012
Fig. 2-70  

Safety Integrated  

Extended Functions via PROFIsafe (9601.2 = 1 and 9601.3 = 1)
Fig. 2-71

2860 – SI Motion, SSM (Safe Speed Monitor)

SI Mtn enable P1
p9501.16 (0000 0000 0000 0000 0000 0000 0000 0000 bin)

SI Mtn enable P2
p9301.16 (0000 0000 0000 0000 0000 0000 0000 0000 bin)

SI Mtn SSM v_limP1
0.00 ... 100000.00 [rpm]
p9546 (20.00)

SI Mtn SSM v_limP2
0.00 ... 100000.00 [rpm]
p9346 (20.00)

SI Mtn SSM filt P1
0.00 ... 100.00 [ms]
p9545 (0.00)

SI Mtn SSM filt P2
0.00 ... 100000.00 [μs]
p9345 (0.00)

SI Mtn SSM hyst P1
0.0010 ... 500.0000 [rpm]
p9547 (10.0000)

SI Mtn SSM hyst P2
0.0010 ... 500.0000 [rpm]
p9347 (10.0000)

SI Mtn integ stat

1 = SSM
(Speed below limit value)

SI Mtn diag v P1 [rpm]
[p9714[0]]

SI Mtn diag v P2 [rpm]
[p9722]

r9714[0..2]

r9722.15

[2840.5]

vf_2860_97_53.vsd

Function diagram

Safety Integrated

SI Motion, SSM: Safe Speed Monitor
SI Mtn enable P1
p9501.17 (0000 0000 0000 0000 0000 0000 0000 0000 bin)

SI Mtn enable P2
p9301.17 (0000 0000 0000 0000 0000 0000 0000 0000 bin)

SI Mtn integ STW
0 = SDI positive selected [2840.1]

SI Mtn integ STW
0 = SDI negative selected [2840.1]

SI Mtn SDI t P1
0.00 ... 600000.00 [ms] p9565 (100.00)

SI Mtn SDI t P2
0.00 ... 600000000.00 [μs] p9365 (12.000)

SI Mtn SDI tol P1
0.001 ... 360.000 [°] p9564 (12.000)

SI Mtn SDI Stop P1
0 ... 1 p9566 (1)

SI Mtn integ stat
0 = SDI positive active [2840.5]
0 = SDI negative active [2840.5]

SI Mtn setp_lim [rpm]
0 = SDI positive selected
0 = SDI negative selected

Setpoint limitation positive
<1>
p1082

Setpoint limitation negative
0

Setpoint limitation absolute
0

Deselection SDI positive
p1082

Deselection SDI negative
0

SDI positive + SLSx
p9531[x] x p9533

SDI negative + SLSx
0
2.10 Setpoint channel

Function diagrams

<table>
<thead>
<tr>
<th>Function Code</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3010</td>
<td>Fixed speed setpoints, binary selection (p1016 = 2)</td>
<td>2-584</td>
</tr>
<tr>
<td>3011</td>
<td>Fixed speed setpoints, direct selection (p1016 = 1)</td>
<td>2-585</td>
</tr>
<tr>
<td>3020</td>
<td>Motorized potentiometer</td>
<td>2-586</td>
</tr>
<tr>
<td>3030</td>
<td>Main/supplementary setpoint, setpoint scaling, jogging</td>
<td>2-587</td>
</tr>
<tr>
<td>3040</td>
<td>Direction limitation and direction reversal</td>
<td>2-588</td>
</tr>
<tr>
<td>3050</td>
<td>Skip frequency bands and speed limitations</td>
<td>2-589</td>
</tr>
<tr>
<td>3060</td>
<td>Basic ramp-function generator</td>
<td>2-590</td>
</tr>
<tr>
<td>3070</td>
<td>Extended ramp-function generator</td>
<td>2-591</td>
</tr>
<tr>
<td>3080</td>
<td>Ramp-function generator selection, status word, tracking</td>
<td>2-592</td>
</tr>
</tbody>
</table>
STW setpoint chan
p1021 r1198
[2505.2] r1198.1
STW setpoint chan
p1022 r1198
[2505.2] r1198.2
STW setpoint chan
p1023 r1198
[2505.2] r1198.3

0.000
n_set_fixed 1
-210000.000 ... 210000.000 [rpm]
p1001 [D] (0.000)
n_set_fixed 2
-210000.000 ... 210000.000 [rpm]
p1002 [D] (0.000)
n_set_fixed 3
-210000.000 ... 210000.000 [rpm]
p1003 [D] (0.000)

0 0 0 1

0 0 1 0

0 0 1 1

n_set_fixed 4
-210000.000 ... 210000.000 [rpm]
p1004 [D] (0.000)
n_set_fixed 5
-210000.000 ... 210000.000 [rpm]
p1005 [D] (0.000)

0 1 0 0

0 1 0 1

n_set_fixed 6
-210000.000 ... 210000.000 [rpm]
p1006 [D] (0.000)
n_set_fixed 7
-210000.000 ... 210000.000 [rpm]
p1007 [D] (0.000)

0 1 1 0

0 1 1 1

n_set_fixed 8
-210000.000 ... 210000.000 [rpm]
p1008 [D] (0.000)
n_set_fixed 9
-210000.000 ... 210000.000 [rpm]
p1009 [D] (0.000)

1 0 0 1

1 0 1 0

1 0 1 1

n_set_fixed 12
-210000.000 ... 210000.000 [rpm]
p1012 [D] (0.000)
n_set_fixed 13
-210000.000 ... 210000.000 [rpm]
p1013 [D] (0.000)

1 1 0 0

1 1 0 1

n_set_fixed 14
-210000.000 ... 210000.000 [rpm]
p1014 [D] (0.000)
n_set_fixed 15
-210000.000 ... 210000.000 [rpm]
p1015 [D] (0.000)

4

n_set_fixed eff [rpm]
r1024

1 0 0 0

n_set_fixed 10
-210000.000 ... 210000.000 [rpm]
p1010 [D] (0.000)
n_set_fixed 11
-210000.000 ... 210000.000 [rpm]
p1011 [D] (0.000)

1
2
3
Setpoint channel
Fixed speed setpoints, binary selection (p1016 = 2)

n_set_fixed No act
r1197

0 0 0 0

1 1 1 0

1 1 1 1

5

6
fp_3010_97_51.vsd
20.12.2011

V4.5

7
Function diagram
G120 CU240B/E-2

8
- 3010 -

Function diagrams

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SINAMICS G120 CU240B/E-2 Control Units List Manual (LH11), 01/2012

3010 – Fixed speed setpoints, binary selection (p1016 = 2)

Setpoint channel

Fig. 2-73

2-584

STW setpoint chan
p1020 r1198
[2505.2] r1198.0


Fixed speed setpoints, direct selection (p1016 = 1)

n_set_fixed 1
-210000.000 ... 210000.000 [rpm]

n_setp_fix status

n_set_fixed eff [rpm]

n_set_fixed 2
-210000.000 ... 210000.000 [rpm]

n_set_fixed 3
-210000.000 ... 210000.000 [rpm]

n_set_fixed 4
-210000.000 ... 210000.000 [rpm]
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<th>Setpoint channel</th>
<th>Function diagram</th>
<th>Motorized potentiometer</th>
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<td><strong>3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>4</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Motorized potentiometer**: The setpoint for the motorized potentiometer is not saved and after ON is entered using p1040.
- **Automatic mode**: The setpoint for the motorized potentiometer is saved in a fashion after OFF and after ON set to the saved value.
- **Initial rounding-off active**: Without ramp-function generator in automatic mode (ramp-up/ramp-down time = 0).
- **Save in NVRAM active**: With ramp-function generator in automatic mode.
- **Ramp-function generator is always active**: With initial rounding. The ramp-up/down time set is exceeded accordingly.
- **Ramp-up encoder inactive with pulse inhibit**: Not saved in the NVRAM (NVRAM = Non Volatile Random Access Memory).
- **Ramp-up encoder is calculated independently of the pulse enable**: Save in NVRAM active.

- **For automatic commissioning, p1037 and p1038 are set to the maximum motor frequency or to the rated motor frequency**, provided that \( f_{\text{max, mot}} \) has not been specified.
- **If initial rounding-off is active (p1030.2 = 1)**, the selected ramp-up/down times are exceeded accordingly.
- **Only effective if p1030.0 = 0**.
Jogging can only be activated in the operating state "Ready for operation (S2)".

If technology controller is activated (p2200 > 0, p2251 = 0) connected with r2349.4.

If technology controller is activated (p2200 > 0, p2251 = 0) connected with r2294.

The connection to the source for the main and additional setpoint is established automatically via the setting in p1000.
Setpoint channel

Direction limitation and direction reversal

Function diagram

Fig. 2-77 - 3040 - Direction limitation and direction reversal

Setpoint channel

p1110
p1113

STW setpoint chan

[2505.2]

STW setpoint chan

[2505.2]

STW setpoint chan

[2505.2]

1 = Direction reversal

1 = Inhibit negative direction of rotation

1 = Inhibit positive direction of rotation

n_set_1

Setp after limit [rpm]

n_limit setp

0.000 ... 210000.000 [rpm]

p1063 [D] (210000.000)

r1198

r1198.11

r1198.5

r1198.8

4

5

6

7

8

1

2

3

- 3040 -

fp_3040_97_53.vsd

Function diagram


G120 CU240B/E-2

G120 CU240B/E-2 Control Units List Manual (LH11), 01/2012

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A suppression frequency of '0' de-activates the suppression frequency bandwidth.

The setting range of p1082 is limited to f_max_mot.

If the drive is not stopped via the input setpoint, but via controlled intervention, the lower hysteresis branch is relevant after a subsequent run-up.

Setp after limit [rpm] n_skip 1
0.000 ... 210000.000 [rpm] p1091 [D] (0.000)

n_min
0.000 ... 19500.000 [rpm] p1080 [D] (0.000)

n_skip bandwidth
0.000 ... 210000.000 [rpm] p1101 [D] (0.000)

Setp after limit [rpm] n_skip 2
0.000 ... 210000.000 [rpm] p1092 [D] (0.000)

n_skip 3
0.000 ... 210000.000 [rpm] p1093 [D] (0.000)

n_min
0.000 ... 19500.000 [rpm] p1080 [D] (0.000)

n_skip 4
0.000 ... 210000.000 [rpm] p1094 [D] (0.000)

n_limit pos
0.000 ... 210000.000 [rpm] p1083 [D] (210000.000)

n_limit pos
1083 [0]
p1085 [C]

n_limit neg
-210000.000 ... 0.000 [rpm] p1086 [D] (-210000.000)

n_limit neg
1086 [0]
p1088 [C]

n_set aft min_lim [rpm]
1112

n_limit RFG pos
1083 [0]
p1051 [C]

n_limit RFG neg
1086 [0]
p1052 [C]

RFG setp at inp [rpm] (1119)

Max
n_limit neg eff [rpm]
1087

Limiting to negative values

Reference value for the ramp-function generator

Setp after limit [rpm] n_setp at inp [rpm]

Maximum limiting active [3080.4]

n_limit pos eff [rpm]
(1084)

[6030.1]
[6640.5]
[9010.2]

[3020.6]
[3060.4]
[3070.4]

[6030.1]
[6640.5]
[9010.2]
### Function Diagram: 3060 - Basic ramp-function generator

#### General Settings
- **Setpoint channel**: STW setpoint chan
- **Ramp flattening-off**: STW seq_ctrl
- **Ramp-up time**: RFG ramp-up time
  - Range: 0.000 ... 999999.000 [s]
  - Default: 10.000 [s]
- **Ramp-down time**: RFG ramp-down time
  - Range: 0.000 ... 999999.000 [s]
  - Default: 30.000 [s]
- **OFF**: OFF 3 t_RD
  - Range: 0.000 ... 5400.000 [s]
  - Default: 30.000 [s]

#### Status Bits
- **Ramp-function generator, status bits**: STW seq_ctrl
  - **<1> Inhibited during jogging.**
  - **<2> After a 0/1 signal the ramping is re-started.**
  - **<3> With activated Technology controller (p2200 > 0, p2251 = 0) the ramp-function generator is bypassed (r2349.5).**
  - **<4> Value range and/or factory setting depend on Power Module.**

#### Additional Settings
- **Ramp-function generator, status bits**:
  - **n_set_4**: 1 = Enable ramp-function generator

#### Additional Notes
- **Ramp function generator, status bits**: Other status bits
  - **Ramp-up active**
  - **Ramp-down active**

### Table: 3060 - Basic ramp-function generator

<table>
<thead>
<tr>
<th>Setpoint channel</th>
<th>Function diagram</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic ramp-function generator</td>
<td>fp_3060_97_02.vsd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Fig. 2-80  
3070 – Extended ramp-function generator

Extended ramp-function generator

Setpoint channel

1  2  3  4  5  6  7  8  
Setpoint channel | 1  2  3  4  5  6  7  8  
Extended ramp-function generator | fp_3070_97_02.vsd  | Function diagram  
Ramp-function generator selection

- From the basic ramp-function generator
- From the extended ramp-function generator

Ramp-function generator tracking

- Ramp-flattening-off
- Ramp function generator enable
- Interpolator
- Interpolator

Ramp-function generator status word

<table>
<thead>
<tr>
<th>Bit</th>
<th>Hochlaufgeber-Zustandswort</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Ramp-up active</td>
</tr>
<tr>
<td>1</td>
<td>Ramp-down active</td>
</tr>
<tr>
<td>2</td>
<td>Ramp-function generator active</td>
</tr>
<tr>
<td>3</td>
<td>Ramp-function generator set</td>
</tr>
<tr>
<td>4</td>
<td>Ramp-function generator held</td>
</tr>
<tr>
<td>5</td>
<td>Ramp-function generator tracking active</td>
</tr>
<tr>
<td>6</td>
<td>Maximum limiting active</td>
</tr>
<tr>
<td>7</td>
<td>Reserved</td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
</tr>
<tr>
<td>10</td>
<td>Reserved</td>
</tr>
<tr>
<td>11</td>
<td>Reserved</td>
</tr>
<tr>
<td>12</td>
<td>Reserved</td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

For p1145 > 0, ramp-function generator tracking is activated when the torque limiting responds. This means that the speed controller output only exceeds the torque limit by a deviation that can be set via p1145.

For OFF1/OFF3, the ramp-function generator ramp is active. The ramp-function generator is set to the setpoint (r1170) and stops the drive with the ramp-downtime (p1121 or p1135).

STW1.4 (enable ramp-function generator) is effective while the drive is stopped via the ramp-function generator. Depending on the p1115, the basic ramp-function generator [3060] or the extended ramp-function generator [3070] is effective.

Behavior of the response ramp of the torque limiting:
- p1145 = 0.0: No ramp-function generator tracking. The ramp-function generator ramp no longer in the range of the frequency actual value.
- p1145 > 1.0: The ramp-function generator ramp remains as close as possible to the speed actual value.
- p1145 = 1.0: The ramp-function generator ramp is steeper than for p1145 = 1.0 (higher "speed following error").

The value is displayed correctly only with r0899.2 = 1 (operation enabled)
# 2.11 V/f control

## Function diagrams

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<th>Description</th>
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<tr>
<td>6310</td>
<td>Resonance damping and slip compensation</td>
<td>2-595</td>
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<tr>
<td>6320</td>
<td>Vdc_max controller and Vdc_min controller (V/f control, PM230/PM240)</td>
<td>2-596</td>
</tr>
</tbody>
</table>
Function diagrams

V/f control

Fig. 2-82 6300 – V/f characteristic and voltage boost

- Linear -
- Flux current control (FCC) Dependent on the load current
- ECO Mode
- Parabolic
- Freely programmable

For p1320 = 0, the voltage boost via p1310 is not effective.
p1312 is only effective for the first acceleration phase after pulse enable.

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<td>Function diagram</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
**U/f resonance damping**

- **Uf Res_damp gain**
  - 0.00 ... 100.00
  - p1338 [D] (0.00)

- **Uf Res_damp T**
  - 1.00 ... 1000.00 [ms]
  - p1339 [D] (20.00)

- **f_res damp**
  - [1690.7]

- **f_outp [Hz]**
  - [6730.4]
  - [6731.4]

- **Mot slip_rated [Hz]**
  - r0330 [D]

- **Slip comp scal**
  - 0.0 ... 600.0 [%]
  - p1335 [D] (0.0)

- **Slip comp lim val**
  - 0.00 ... 600.00 [%]
  - p1336 [D] (250.00)

- **p1349 [D] (0.00)**

- **Brake f_start**
  - p1352 [D] (1951[D])

- **Brake f_start**
  - p1351 [D] (0.00)

**U/f slip compensation**

- **Slip comp act val [%]**
  - 100 %
  - p1337 [D]

- **Mot slip_rated [Hz]**
  - r0330 [D]

- **Slip compensation**
  - [1690.6]

- **<2> Activation with r0056.4 = 1 till r0066 >= p1334 and p1216 has expired.**

- **100 % equal r0330 (Rated motor slip)**

**Notes:**
- <1> If p1349 = 0: the limit is 0.95 x f Mot N <= 45 Hz.
- <2> Activation with r0056.4 = 1 till r0066 >= p1334 and p1216 has expired.

**Function diagram information:**
- **Function diagram:** fp_6310_97_53.vsd
- **Date:** 20.12.2011
- **Version:** V4.5
- **Device:** G120 CU240B/E-2
Function diagrams

V/f control

6320 – Vdc_max controller and Vdc_min controller (V/f control, PM230/PM240)

Vdc_max (U/f control)

Vdc_min (U/f control)

(only for PM240)

Vdc_max controller and Vdc_min controller (PM230 / PM240)

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<td>Vdc_max controller and Vdc_min controller (PM230 / PM240)</td>
<td>fp_6320_97_02.vsd</td>
<td>Function diagram</td>
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## 2.12 Vector control

### Function diagrams

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<td>Id setpoint (PEM, p0300 = 2xx)</td>
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<td>Field weakening characteristic, Id setpoint (ASM, p0300 = 1)</td>
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<td>Field weakening controller, flux controller (ASM, p0300 = 1)</td>
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<td>6724</td>
<td>Field weakening controller (PEM, p0300 = 2xx)</td>
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<td>6730</td>
<td>Interface to the Power Module (ASM, p0300 = 1)</td>
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<td>6731</td>
<td>Interface to the Power Module (PEM, p0300 = 2xx)</td>
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<td>6799</td>
<td>Display signals</td>
<td>2-616</td>
</tr>
</tbody>
</table>
Vector control

1 = Kp/Tn adaptation active

1 = Automatic Kp/Tn adaptation active

1 = Speed controller, I component held

1 = Speed controller active

1 = Sensorless vector control, freeze I component

Torque setting value, speed controller

For p1472 = 0.0 s or 100.0 s, the I component is disabled (integral action time = infinite).
Free $K_p_n$ adaptation

- $K_p_n$ adaptation active ($p1400.6$)

- Free $T_n$ adaptation active ($p1400.6$)

Speed-dependent $K_p_n/T_n_n$ adaptation

$<1>$ If the lower transition point exceeds the upper transition point, the $K_p$-adaptation also changes over.
Fig. 2-89 6060 – Torque setpoint

- The signal is only effective after magnetization has been completed (p1500.4 = 1).
- No pre-control if the Vdc controller is active (p1522.8).
- Acceleration control is inhibited for p1517 = 100 ms.
- M_set is also influenced by the speed limit controller.
- The connection to the source for the torque setpoint is estabished automatically via the setting in p1500.
**Vdc_max (Vector control)**

- **Vdc act val [V]**
  - Value range: 0 to 1000 [V]
  - p0210 (100)

- **Calculate on_level**
  - Value range: 0 to 100 [V]
  - p1240 (100)

- **Vdc_max on level [V]**
  - Value range: 0 to 1000 [V]
  - p1251 (100)

- **Vdc_ctrl output [Arms]**
  - Value range: 0 to 100 [Arms]
  - p1243 (100)

- **Vdc_ctrl config vec**
  - Value range: 0 to 3
  - p1240 (1)

- **Vdc_ctrl Ke**
  - Value range: 0 to 10000 [ms]
  - p1250 (100)

- **Vdc_ctrl Kp**
  - Value range: 0 to 10000 [ms]
  - p1250 (100)

- **Vdc_ctrl t_rate**
  - Value range: 0 to 1000 [ms]
  - p1252 (100)

- **Vdc_ctrl t_rate**
  - Value range: 0 to 10000 [ms]
  - p1252 (100)

- **Vdc max dyn_factor**
  - Value range: 1 to 10000 [%]
  - p1243 (100)

- **Vdc_min dyn_factor**
  - Value range: 1 to 10000 [%]
  - p1247 (300)

**Vdc_min (Vector control)**

- **Vdc act val [V]**
  - Value range: 0 to 1000 [V]
  - p0210 (100)

- **Calculate on_level**
  - Value range: 0 to 100 [V]
  - p1240 (100)

- **Vdc_min on level [V]**
  - Value range: 0 to 1000 [V]
  - p1251 (100)

- **Vdc_ctrl output [Arms]**
  - Value range: 0 to 100 [Arms]
  - p1243 (100)

- **Vdc_ctrl config vec**
  - Value range: 0 to 3
  - p1240 (1)

- **Vdc_ctrl Ke**
  - Value range: 0 to 10000 [ms]
  - p1250 (100)

- **Vdc_ctrl Kp**
  - Value range: 0 to 10000 [ms]
  - p1250 (100)

- **Vdc_ctrl t_rate**
  - Value range: 0 to 1000 [ms]
  - p1252 (100)

- **Vdc_ctrl t_rate**
  - Value range: 0 to 10000 [ms]
  - p1252 (100)

- **Vdc min dyn_factor**
  - Value range: 1 to 10000 [%]
  - p1247 (300)

**Vdc_max controller and Vdc_min controller (PM230 / PM240)**

- **Vdc_max SenseOnLev**
  - Value range: 0 to 1
  - p1254 (0)

- **ZSW cl-loop ctrl**
  - Value range: 0 to 1
  - p0056 (1)

- **Operating point selection**
  - Value range: 0 to 1
  - p6710 (0)

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**Fig. 2-90 6220 – Vdc_max and Vdc_min controller (PM230 / PM240)**

**Function diagram**

**Notes:**
1. p1240: 0: Inhib Vdc ctrl
   - 1: Enable Vdc_max controller
   - 2: Enable Vdc_min controller (kinetic buffering) (only for PM240)
   - 3: Enable Vdc_min controller and Vdc_max controller
2. Value range and/or factory setting depend on Power Module
### Speed control configuration

<table>
<thead>
<tr>
<th>Bit No</th>
<th>Meaning</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>1 = Automatic Kp/Tn adaptation active</td>
<td>8040.3</td>
</tr>
<tr>
<td>01</td>
<td>1 = Sensorless vector control, freeze I component</td>
<td>8040.3</td>
</tr>
<tr>
<td>02</td>
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<td></td>
</tr>
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<td>03</td>
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</tr>
<tr>
<td>04</td>
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<tr>
<td>05</td>
<td>1 = Kp/Tn adaptation active</td>
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</tr>
<tr>
<td>06</td>
<td>1 = Free Tn adaptation active</td>
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<td>07</td>
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<tr>
<td>08</td>
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</tr>
<tr>
<td>13</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>1 = Torque pre-control always active</td>
<td>6060.4</td>
</tr>
<tr>
<td></td>
<td>0 = Torque pre-control for n_ctrl enabled</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1 = Sensorless vector control, speed pre-control active</td>
<td>6030.5</td>
</tr>
</tbody>
</table>

**Vector control**

- Factory setting
- Reserved

**Speed control configuration**

- Bit No. 00: Automatic Kp/Tn adaptation active
- Bit No. 01: Sensorless vector control, freeze I component
- Bit No. 05: Kp/Tn adaptation active
- Bit No. 06: Free Tn adaptation active
- Bit No. 14: Torque pre-control always active
- Bit No. 15: Sensorless vector control, speed pre-control active

**Function diagram**

- 6040.3
- 8040.3
- 6050.6
- 6060.4
- 6030.5

**Table values**

<table>
<thead>
<tr>
<th>Bit No</th>
<th>Meaning</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>1 = Automatic Kp/Tn adaptation active</td>
<td>8040.3</td>
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<tr>
<td>01</td>
<td>1 = Sensorless vector control, freeze I component</td>
<td>8040.3</td>
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<td>02</td>
<td>Reserved</td>
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<td>03</td>
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<td></td>
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<td>Reserved</td>
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<td>05</td>
<td>1 = Kp/Tn adaptation active</td>
<td>8040.3</td>
</tr>
<tr>
<td>06</td>
<td>1 = Free Tn adaptation active</td>
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<td>07</td>
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<td>12</td>
<td>Reserved</td>
<td></td>
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<tr>
<td>13</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>1 = Torque pre-control always active</td>
<td>6060.4</td>
</tr>
<tr>
<td></td>
<td>0 = Torque pre-control for n_ctrl enabled</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1 = Sensorless vector control, speed pre-control active</td>
<td>6030.5</td>
</tr>
</tbody>
</table>

**Function diagrams**

- fp_6490_97_53.vsd
- G120 CU240B/E-2
### Flux control configuration

**Bit No.** | **Meaning** | **Factory setting**
--- | --- | ---
00 | 1 = Flux setpoint, soft starting active | 0 → [6722.3]
01 | 1 = Flux setpoint, differentiation active | 1 → [6723.7]
02 | 1 = Flux build-up control active | → [6723.6]
03 | Reserved | 
04 | Reserved | 
05 | Reserved | 
06 | 1 = Quick magnetization | 0 → [6722.5]
07 | Reserved | 
08 | Reserved | 
09 | Reserved | 
10 | Reserved | 
11 | Reserved | 
12 | Reserved | 
13 | Reserved | 
14 | Reserved | 
15 | Reserved | 

---

Vector control: fp_6491_97_53.vsd

Flux control configuration:

- Date: 20.12.2011
- Version: V4.5
- Control Unit: G120 CU240B/E-2
Upper torque limit

M_max upper
-1000000.00 ... 20000000.00 [Nm]
p1520 [D] (0.00)

M_max upper
p1522 [C]
1520[0]

M_max up/mot scal
-2000.0 ... 2000.0 [%]
p1524 [D] (100.0)

M_max upper scal
p1528 [C]
1524[0]

Lower torque limit

M_max lower
-20000000.00 ... 1000000.00 [Nm]
p1521 [D] (0.00)

M_max lower
p1523 [C]
1521[0]

M_max lower scal
-2000.0 ... 2000.0 [%]
p1525 [D] (100.0)

M_max lower scal
p1529 [C]
1525[0]

Danger: Negative values at <1> represent a minimum torque for the other torque direction and can cause the motor to accelerate uncontrollably.

Positive values at <2> represent a minimum torque for the other torque direction and can cause the motor to accelerate uncontrollably.

<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>Vector control</td>
<td>fp_6630_97_53.vsd</td>
<td>Function diagram</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Current limiting**

- \( \text{U_output max (Vrms)} \)
- \( \text{r0071} \)
- \( \text{Iq} \)
- \( \text{M} \)
- \( \text{Id_set total (Arms)} \)
- \( \text{rp0624} \)

**Speed limiting**

- \( \text{Kp from speed controller [6040.5]} \)
- \( \text{Tp from speed controller [6040.6]} \)
- \( \text{n_limit pos eff (rpm)} \)
- \( \text{[3050.8]} \)
- \( \text{[6721.8]} \)
- \( \text{[6730.1]} \)
- \( \text{[6732.1]} \)
- \( \text{[6733.4]} \)

**Power limiting**

- \( \text{P_max gen (-100000.00 ... -0.01 kW)} \)
- \( \text{p1531 (D) (-0.01)} \)
- \( \text{P_max mot 0.00 ... 100000.00 [kW]} \)
- \( \text{p1530 (D) (0.00)} \)

\(<1>\) Intervention by the Vdc controller.

\(<2>\) Intervention when the speed limit is exceeded + 2% \( n_{\text{rated}} \).
Fig. 2-97 6721 – Id setpoint (PEM, p0300 = 2xx)

Vector control

Id setpoint (PEM, p0300 = 2xx)
Function diagrams

- 6722 - Field weakening characteristic, Id setpoint (ASM, p0300 = 1)

1. Field weak T_smth
2. Efficiency optimization
3. Flux setpoint
4. Flux control config
5. Mot T_rotor/T_Dd
6. Flux setpoint smooth
7. Mot excitation
8. Value range and/or factory setting depend on Power Module

ASM: Induction motor

MIN
<0.3 s
0.9

Field weakening characteristic
Efficiency optimization
Mot T_rotor/T_Dd [ms]
U_output max [Vrms]
Flux setpoint
Mot excitation
Mot I_mag_rtd act [Arms]
Mot I_set T_smooth
Id_set calculation
Flux setpoint calculation
Mot I_set T_smooth 4...5000 [ms] p1582 [D] (15)
M_set bef. M_suppl [Nm] 6640.1
Mot I_max_rtd act [Arms] 6640.3
M_set static -200.0 ... 200.0 [%] p1610 [D] (50.0)
M_suppl accel 0.0 ... 200.0 [%] p1611 [D] (30.0)
Id current limit 6723.1
Efficiency opt. 0 ... 100 [%] p1580 [D] (60)
<1>
Flux setp smooth T_smth 4 ... 5000 [ms] p1582 [D] (15)
Mot I_set T_smooth 4 ... 5000 [ms] p1582 [D] (40)
Id_set calculation
Mot T_rotor/T_Dd [ms]
0.000 ... 20.000 [s] p0346 [D] (0.000)
Mot I_mag_rtd act [Arms] r0331 [D]
I_outp max [Arms] r0067
Flux setpoint 50.0 ... 200.0 [%] p1570 [D] (100.0)
n_act [rpm] 6730.3
Id output max [Vrms] r0071
Efficiency opt. 0 ... 100 [%] p1580 [D] (60)
<1>
Id_set current limit
Mot excitation 0.000 ... 20.000 [s] p0346 [D] (0.000)
Mot I_suppl accel [Arms] 0.0 ... 200.0 [%] p1611 [D] (30.0)
Id_set calculation
Mot I_set T_smooth 4 ... 5000 [ms] p1582 [D] (40)
M_set bef. M_suppl [Nm] 6640.5
M_set static -200.0 ... 200.0 [%] p1610 [D] (50.0)
M_suppl accel 0.0 ... 200.0 [%] p1611 [D] (30.0)
Mot I_max_rtd act [Arms] r0331 [D]
Id output max [Vrms] r0071
Efficiency opt. 0 ... 100 [%] p1580 [D] (60)
<1>
Id_set current limit
Mot excitation 0.000 ... 20.000 [s] p0346 [D] (0.000)
Mot I_suppl accel [Arms] 0.0 ... 200.0 [%] p1611 [D] (30.0)
Id_set calculation
Mot I_set T_smooth 4 ... 5000 [ms] p1582 [D] (40)
M_set bef. M_suppl [Nm] 6640.5
M_set static -200.0 ... 200.0 [%] p1610 [D] (50.0)
M_suppl accel 0.0 ... 200.0 [%] p1611 [D] (30.0)
Mot I_max_rtd act [Arms] r0331 [D]
Id output max [Vrms] r0071
Efficiency opt. 0 ... 100 [%] p1580 [D] (60)
<1>
Id_set current limit
Mot excitation 0.000 ... 20.000 [s] p0346 [D] (0.000)
Mot I_suppl accel [Arms] 0.0 ... 200.0 [%] p1611 [D] (30.0)
Id_set calculation
Mot I_set T_smooth 4 ... 5000 [ms] p1582 [D] (40)
M_set bef. M_suppl [Nm] 6640.5
M_set static -200.0 ... 200.0 [%] p1610 [D] (50.0)
M_suppl accel 0.0 ... 200.0 [%] p1611 [D] (30.0)
Mot I_max_rtd act [Arms] r0331 [D]
Fig. 2-99
6723 – Field weakening controller, flux controller (ASM, p0300 = 1)

Calculation, max. modulation depth

U_max 1

Modulation depth max [%]

U_output max [Vrms]

Field Ctrl Tn
10 ... 10000 [ms]

p0362 ... p0369

ASM: Induction motor

U_set 1

Vdc act val [V]

U_reserve dyn
0.0 ... 150.0 [Vrms]

p1574 [D] (2.0)

p1803 [D] (115.0)

Quick magnetizing active

Saturation characteristic

p0362 ... p0369

Id_setp total [%]

id_setp total [Arms]

p1623

Flux setp total [%]

p1588

Flux setp smooth [%]

Flux CTRL config

p1401.2

p1401.1

<1> Value range and/or factory setting depend on p0500

ASM: Induction motor

<table>
<thead>
<tr>
<th>Vector control</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>
</tr>
</thead>
</table>
Field weakening controller (PEM, p0300 = 2xx)

- Vector control
- Field weakening controller (PEM, p0300 = 2xx)

Value range and/or factory setting depend on p0500
Fig. 2-102 6731 – Interface to the Power Module (PEM, p0300 = 2xx)

Control Unit

- Current model
- Precontrol speed
- PWM
- Vibration damping
- kT estimator
- Direct U set [Vrms]
- Motor model
- U_set
- U_angle
- Gain res_damp
- Vdc act val [V]
- Modulat_depth [%]
- ZSW cl-loop ctrl
- Modulat_depth [%]

Power Module

- DC link voltage
- Pulse enable HW
- PWM
- U
- V
- W
- M
- P24
- BRP
- BRN
- PEM
- Permanent-magnet synchronous motor

Vector control

Interface to the Power Module (PEM, p0300 = 2xx)
# 2.13 Free function blocks

## Function diagrams

<table>
<thead>
<tr>
<th>Function Code</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>7200</td>
<td>Run-time groups / sampling times</td>
<td>2-618</td>
</tr>
<tr>
<td>7210</td>
<td>AND (AND function block with 4 inputs)</td>
<td>2-619</td>
</tr>
<tr>
<td>7212</td>
<td>OR (OR function block with 4 inputs)</td>
<td>2-620</td>
</tr>
<tr>
<td>7214</td>
<td>XOR (XOR function block with 4 inputs)</td>
<td>2-621</td>
</tr>
<tr>
<td>7216</td>
<td>NOT (inverter)</td>
<td>2-622</td>
</tr>
<tr>
<td>7220</td>
<td>ADD (adder with 4 inputs), SUB (subtractor)</td>
<td>2-623</td>
</tr>
<tr>
<td>7222</td>
<td>MUL (multiplier), DIV (divider)</td>
<td>2-624</td>
</tr>
<tr>
<td>7224</td>
<td>AVA (absolute value generator)</td>
<td>2-625</td>
</tr>
<tr>
<td>7225</td>
<td>NCM (numeric comparator)</td>
<td>2-626</td>
</tr>
<tr>
<td>7226</td>
<td>PLI (polyline scaling)</td>
<td>2-627</td>
</tr>
<tr>
<td>7230</td>
<td>MFP (pulse generator), PCL (pulse contractor)</td>
<td>2-628</td>
</tr>
<tr>
<td>7232</td>
<td>PDE (ON delay)</td>
<td>2-629</td>
</tr>
<tr>
<td>7233</td>
<td>PDF (OFF delay)</td>
<td>2-630</td>
</tr>
<tr>
<td>7234</td>
<td>PST (pulse stretcher)</td>
<td>2-631</td>
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<tr>
<td>7240</td>
<td>RSR (RS flip-flop), DFR (D flip-flop)</td>
<td>2-632</td>
</tr>
<tr>
<td>7250</td>
<td>BSW (binary change-over switch), NSW (numeric change-over switch)</td>
<td>2-633</td>
</tr>
<tr>
<td>7260</td>
<td>LIM (limiter)</td>
<td>2-634</td>
</tr>
<tr>
<td>7262</td>
<td>PT1 (smoothing element)</td>
<td>2-635</td>
</tr>
<tr>
<td>7264</td>
<td>INT (integrator), DIF (derivative-action element)</td>
<td>2-636</td>
</tr>
<tr>
<td>7270</td>
<td>LVM (double-sided limit monitor with hysteresis)</td>
<td>2-637</td>
</tr>
<tr>
<td>Run-time group</td>
<td>1</td>
<td>2</td>
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<tr>
<td>----------------</td>
<td>-------</td>
<td>-------</td>
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<tr>
<td></td>
<td>RTG sampling time [ms]</td>
<td>8 ms</td>
</tr>
<tr>
<td>Logic function blocks</td>
<td>AND, OR, XOR, NOT</td>
<td>X</td>
</tr>
<tr>
<td>Arithmetic function blocks</td>
<td>ADD, SUB, MUL, DIV, AVA, NCM, PLI</td>
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</tr>
<tr>
<td>Time function blocks</td>
<td>MFP, PCL, PDE, PDF, PST</td>
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<tr>
<td>Memory function blocks</td>
<td>RSR, DSR</td>
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<td>Switch function block NSW</td>
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<td>Switch function block BSW</td>
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<td>Control function blocks</td>
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<td>Complex function blocks LVM</td>
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Function diagrams

Free function blocks

Run-time groups / Sampling times

Table:

<table>
<thead>
<tr>
<th>Free Function Blocks</th>
<th>fp_7200_97_51.vsd</th>
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</thead>
<tbody>
<tr>
<td>Run-time groups / Sampling times</td>
<td>20.12.2011 V4.5</td>
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</tbody>
</table>
Fig. 2-105  7210 – AND (AND function block with 4 inputs)

<p>| | | | | | | | |</p>
<table>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>
Fig. 2-107 7214 – XOR (XOR function block with 4 inputs)

**XOR 0**

- **XOR 0 outputs**: Q
- **XOR 0 inputs**: I0
- **RTG**: 1...9999
- **RunSeq**: 0...32000

**XOR 1**

- **XOR 1 outputs**: Q
- **XOR 1 inputs**: I0
- **RTG**: 1...9999
- **RunSeq**: 0...32000

**XOR 2**

- **XOR 2 outputs**: Q
- **XOR 2 inputs**: I0
- **RTG**: 1...9999
- **RunSeq**: 0...32000

**XOR 3**

- **XOR 3 outputs**: Q
- **XOR 3 inputs**: I0
- **RTG**: 1...9999
- **RunSeq**: 0...32000
Arithmetic function blocks

MUL (multiplier), DIV (divider)

MUL 0

- Function diagram
- MUL 0 RTG
- 5 ... 9999
- p20112 (9999)
- MUL 0 RunSeq
- 0 ... 32000
- p20113 (270)
- MUL 0 product Y

x
X0
X1
X2
X3
Y

MUL 1

- Function diagram
- MUL 1 RTG
- 5 ... 9999
- p20116 (9999)
- MUL 1 RunSeq
- 0 ... 32000
- p20117 (250)
- MUL 1 product Y

x
X0
X1
X2
X3
Y

DIV 0

- Function diagram
- DIV 0 RTG
- 5 ... 9999
- p20121 (9999)
- DIV 0 RunSeq
- 0 ... 32000
- p20122 (300)
- DIV 0 quotient
- X1 / X2

x
X0
X1
X2
Y

DIV 1

- Function diagram
- DIV 1 RTG
- 5 ... 9999
- p20126 (9999)
- DIV 1 RunSeq
- 0 ... 32000
- p20127 (310)
- DIV 1 quotient
- X1 / X2

x
X0
X1
X2
Y

Arithmetic function blocks

MUL (multiplier), DIV (divider)

fp_7222_97_51.vsd
G120 CU240B/E-2
AVA 0
AVA 0 RTG 0 \ldots 9999
p20131 (9999)
AVA 0 RunSeq 0 \ldots 32000
p20132 (340)
AVA 0 input X
p20128
AVA 0 input neg SN
r20130
AVA 0 output Y
r20129

AVA 1
AVA 1 RTG 0 \ldots 9999
p20136 (9999)
AVA 1 RunSeq 0 \ldots 32000
p20137 (350)
AVA 1 input X
p20133
AVA 1 input neg SN
r20135
AVA 1 output Y
r20134

AVA (absolute value generators)
### NCM 0

**Inputs:**
- X1, X2
- NCM 0 RunSeq 0...32000
- NCM 0 RTG 5...9999

**Outputs:**
- QU
- QE
- QL

**Equations:**
- X1 > X2
- X1 = X2
- X1 < X2

### NCM 1

**Inputs:**
- X1, X2
- NCM 1 RunSeq 0...32000
- NCM 1 RTG 5...9999

**Outputs:**
- QU
- QE
- QL

**Equations:**
- X1 > X2
- X1 = X2
- X1 < X2

---

<table>
<thead>
<tr>
<th>Function blocks</th>
<th>fp_7225_97_51.vsd</th>
<th>Function diagram</th>
<th>7225 -</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCM (numerical comparator)</td>
<td>20.12.2011 V4.5</td>
<td>G120 CU240B/E-2</td>
<td>-</td>
</tr>
</tbody>
</table>
PLI 0

PLI 0 RTG
A/B
0...9999
5...9999
p20374 (9999)

PLI 0 X-coordinate
-340.28235E36...340.28235E36
p20372 (0.0000)

PLI 0 Y-coordinate
-340.28235E36...340.28235E36
p20373 (0.0000)

PLI 0 input X
p20372

PLI 0 output Y
p20373

Note:
This function block randomly adapts output variable Y to input variable X by means of up to 20 breakpoints in 4 quadrants. Interpolation is carried out linearly between the breakpoints. Outlying the area A0 to A19, the characteristic curve runs horizontally. During configuration, you must ensure that the values of A0 to A19 are arranged in ascending order. Otherwise the values at the output will not be correct. The values B0 to B19 can be selected at random, i.e., independently of the previous value.

If breakpoints are not needed (e.g., A16/B16 and higher), the following values of the X- and Y-coordinates (A16/B16 to A19/B19) must be assigned the same values as A15/B15.

PLI 1

PLI 1 RTG
A/B
0...9999
5...9999
p20382 (9999)

PLI 1 X-coordinate
-340.28235E36...340.28235E36
p20378 (0.0000)

PLI 1 Y-coordinate
-340.28235E36...340.28235E36
p20381 (0.0000)

PLI 1 input X
p20378

PLI 1 output Y
p20379

Note:
This function block randomly adapts output variable Y to input variable X by means of up to 20 breakpoints in 4 quadrants. Interpolation is carried out linearly between the breakpoints. Outlying the area A0 to A19, the characteristic curve runs horizontally. During configuration, you must ensure that the values of A0 to A19 are arranged in ascending order. Otherwise the values at the output will not be correct. The values B0 to B19 can be selected at random, i.e., independently of the previous value.

If breakpoints are not needed (e.g., A16/B16 and higher), the following values of the X- and Y-coordinates (A16/B16 to A19/B19) must be assigned the same values as A15/B15.
Fig. 2-115  
7232 – PDE (ON delay)

### PDE 0
- **PDE 0 RTG**: 5...9999 (p20161 (9999))
- **PDE 0 t_del ms**: 0.00...5400000.00 (p20159 (0.00))
- **PDE 0 RunSeq**: 0...32000 (p20162 (430))
- **PDE 0 inp_pulse**: I
- **PDE 0 output Q**: T

### PDE 1
- **PDE 1 RTG**: 5...9999 (p20166 (9999))
- **PDE 1 t_del ms**: 0.00...5400000.00 (p20164 (0.00))
- **PDE 1 RunSeq**: 0...32000 (p20167 (440))
- **PDE 1 inp_pulse**: I
- **PDE 1 output Q**: T

### PDE 2
- **PDE 2 RTG**: 5...9999 (p20337 (9999))
- **PDE 2 t_del ms**: 0.00...5400000.00 (p20335 (0.00))
- **PDE 2 RunSeq**: 0...32000 (p20338 (890))
- **PDE 2 inp_pulse**: I
- **PDE 2 output Q**: T

### PDE 3
- **PDE 3 RTG**: 5...9999 (p20342 (9999))
- **PDE 3 t_del ms**: 0.00...5400000.00 (p20340 (0.00))
- **PDE 3 RunSeq**: 0...32000 (p20343 (900))
- **PDE 3 inp_pulse**: I
- **PDE 3 output Q**: T

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</table>
Fig. 2-117
7234 – PST (pulse stretcher)

**PST 0**

- PST 0 RTG 5...9999
- PST 0 pulse_dur ms 0.00...5400000.00
- PST 0 output Q

**PST 1**

- PST 1 RTG 5...9999
- PST 1 pulse_dur ms 0.00...5400000.00

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Fig. 2-119

7250 – BSW (binary change-over switch), NSW (numeric change-over switch)

BSW 0

BSW 0 inputs
p20208

BSW 0 RTG 1 ... 9999
p20211 (9999)

BSW 0 RunSeq 0 ... 7999
p20212 (580)

BSW 0 sw_setting
p20209

BSW 0 output Q
r20210

BSW 1

BSW 1 inputs
p20213

BSW 1 RTG 1 ... 9999
p20216 (9999)

BSW 1 RunSeq 0 ... 7999
p20217 (590)

BSW 1 sw_setting
p20214

BSW 1 output Q
r20215

NSW 0

NSW 0 inputs
p20218

NSW 0 RTG 5 ... 9999
p20221 (9999)

NSW 0 RunSeq 0 ... 32000
p20222 (610)

NSW 0 sw_setting
p20219

NSW 0 output Y
r20220

NSW 1

NSW 1 inputs
p20223

NSW 1 RTG 5 ... 9999
p20226 (9999)

NSW 1 RunSeq 0 ... 32000
p20227 (620)

NSW 1 sw_setting
p20224

NSW 1 output Y
r20225
PT1 0

PT1 1

### Control Function Blocks

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Function diagrams

Free function blocks

Fig. 2-122 7264 – INT (integrator), DIF (differentiating element)

**INT 0**

Integrating algorithm: 
\[ Y(n) = Y(n-1) + \left(\frac{T_{\text{sample}}}{T_i}\right) \cdot X(n) \]

**DIF 0**

Differentiating algorithm: 
\[ Y(n) = (X(n) - X(n-1)) \cdot \left(\frac{TD}{T_{\text{sample}}}\right) \]

### Table: Control function blocks

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LVM 0

LVM 0 avg value M
-340.28235E36 ... 340.28235E36
p20267 (0.0000)

LVM 0 limit L
-340.28235E36 ... 340.28235E36
p20268 (0.0000)

LVM 0 hyst HY
-340.28235E36 ... 340.28235E36
p20269 (0.0000)

LVM 0 RTG
5 ... 9999
p20273 (9999)

LVM 0 RunSeq
0 ... 7999
p20274 (720)

LVM 0 X above QU
r20270

LVM 0 X within QM
r20271

LVM 0 X below QL
r20272

LVM 1

LVM 1 avg value M
-340.28235E36 ... 340.28235E36
p20276 (0.0000)

LVM 1 limit L
-340.28235E36 ... 340.28235E36
p20277 (0.0000)

LVM 1 hyst HY
-340.28235E36 ... 340.28235E36
p20278 (0.0000)

LVM 1 RTG
5 ... 9999
p20282 (9999)

LVM 1 RunSeq
0 ... 7999
p20283 (730)

LVM 1 X above QU
r20279

LVM 1 X within QM
r20280

LVM 1 X below QL
r20281

Complex function blocks

LVM (limit value monitor, double-sided with hysteresis)
2.14 Technology functions

Function diagrams

7017 – DC braking (p0300 = 1) 2-639
The DC braking current is determined during automatic calculation (p0340 = 1).

The demagnetization time is determined during automatic calculation (p0340 = 1, 3).

To pulse inhibit

To sequence control

From I²t control

The parameters of the I_max current controller are also used.

Current actual values and also via Analog

p0347 [D]

p1230 [C]

p1231 [D] (0)

p1232 [D] (0.00)

p1233 [D] (1.0)

p1234 [D] (210000.00)

I_max_U_ctrl Kp

I_max_U_ctrl Tn

p1345 [D] (0.000)

p1346 [D] (0.030)

U_output [Vrms]

p0072

p0068 [0..1]

I_act abs val [Arms]

I_ctrl Kp

I_ctrl Tn

p1715 [D] (0.000)

p1717 [D] (2.00)

Mot t_de-excitat.

p0347 [D] (0.000)

0.000 ... 20.000 [s]

0.00 ... 3600.0 [s]

0.000 ... 10000.00 [Arms]

0.000 ... 100000.00 [Arms]

0.000 ... 50.000 [s]

0.000 ... 5000.00 [s]
## 2.15 Technology controller

### Function diagrams

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<td>Motorized potentiometer</td>
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<td>7958</td>
<td>Closed-loop control</td>
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The setpoint for the motorized potentiometer is not saved and after ON is entered using p2240.

The setpoint for the motorized potentiometer is saved after OFF and after ON is entered using r2231.

Without initial rounding.

With initial rounding. The ramp-up/down time set is exceeded accordingly.

Non-volatile data save not activated

The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for p2230.0 = 1)

Ramp-up encoder inactive with pulse inhibit.

The ramp-up encoder is calculated independently of the pulse enable.

<1> For p2230.0 = 0, this setpoint is entered after ON.

<2> If initial rounding-off is active (p2230.2 = 1), the selected ramp-up/down times are exceeded accordingly.

For p2230.0 = 0, this setpoint is entered after ON.

If initial rounding-off is active (p2230.2 = 1), the selected ramp-up/down times are exceeded accordingly.
Function diagrams

Technology controller

Fig. 2-128 7958 – Closed-loop control

The start value p2302 is only used in mode p2251 = 0 (Technology controller as speed main setpoint). After enable of technology controller the start value is present as long as the RFG output reaches this value.

<1> P, I and D components can be disabled by entering a zero.

<2> The start value p2302 is only used in mode p2251 = 0 (Technology controller as speed main setpoint).

<3> I component stop, only when r2273 and r2294 in same direction.

<4> By p2251 = 1: p2299 = 0 (default), recommendation: p2299 connected to r1150.

<5> p2349.12 = 1, if p2345 > 0 and actual value limited and start value p2302 not active.

<6> Signal = 0 --> factor = 0, when setpoint from external OP or operating tool

<7> Signal = 0 --> factor = 0, when setpoint from external OP or operating tool

1 2 3 4 5 6 7 8

Technology controller
Closed-loop control

fp_7958_97_53.vsd

G120 CU240B/E-2

- 7958 -
### 2.16 Signals and monitoring functions

#### Function diagrams

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Signals and monitoring functions

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**Function diagrams**

Signals and monitoring functions

**Speed signals 1**

- 8010 -

Function diagram

fp_8010_97_51.vsd

Function diagram


G120 CU240B/E-2
The response to these faults can be defined.

Fault evaluation only with $p_{2181} > 0$ and $p_{2193} > 0$. 

- $p_{2193}$: Load monitoring configuration
- $p_{2181}$: Load monitoring response
- $M_{\text{thresh}}$ 1 upper: $0.00 ... 20000000.00$ [Nm]
- $M_{\text{thresh}}$ 1 lower: $0.00 ... 20000000.00$ [Nm]
- $M_{\text{thresh}}$ 2 upper: $0.00 ... 20000000.00$ [Nm]
- $M_{\text{thresh}}$ 2 lower: $0.00 ... 20000000.00$ [Nm]
- $M_{\text{thresh}}$ 3 upper: $0.00 ... 20000000.00$ [Nm]
- $M_{\text{thresh}}$ 3 lower: $0.00 ... 20000000.00$ [Nm]
- $n_{\text{thresh}}$ 1: $0.00 ... 210000.00$ [rpm]
- $n_{\text{thresh}}$ 2: $0.00 ... 210000.00$ [rpm]
- $n_{\text{thresh}}$ 3: $0.00 ... 210000.00$ [rpm]
Fig. 2-133  
8014 – Thermal monitoring, power unit

Power module
- T_max heatsink
- Temperature measurement
- Pulse freq setp 2.000 ... 16.000 [kHz]
- p1860 [0] (4.000)
- l_act abs val [Arms]
- r2070[0..4]
- PM-IF
- PU overload [Arms]

Control Unit
- Maximum power module temperature
- PU temperatures [°C]
- r0037 [0..19]
- 5 °C
- 100 %
- PU overload I2t [%]
- r0038

Thermal monitoring for the power module
- Max
- Fault thermal overload in power module
- Faults "Power unit overtemperature"
- F30004 Inverter heatsink
- F30024 Thermal model
- F30025 Chip
- F30035 Air intake
- Alarms "power unit overtemperature"
- A05000 Inverter heatsink
- A05001 Chip
- A05002 Air intake
- A05008 Chip to heatsink
- F30005 "Power module overload"
- 1 = Alarm, thermal overload, power module
- ZSW fault/alarm 2
- A07805 "Power module overload"

Signals and monitoring functions
- 1 = Fault thermal overload in power module
- 2 = Faults "Power unit overtemperature"
- 3 = Overload response
- 4 = Alarms "power unit overtemperature"
- 5 = F30005 "Power module overload"
- 6 = 1 = Alarm, thermal overload, power module
- 7 = ZSW fault/alarm 2
- 8 = A07805 "Power module overload"

Function diagram - 8014 -

fp_8014_97_51.vsd


G120 CU240B-E-2

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Signals and monitoring functions
Thermal monitoring, motor

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</table>
Thermal I²t motor model (only for synchronous machine)

Mot_temp_mod act
-...

Mot I standstill
0.00 ... 10000.00 [Arms]
p0318 [D] (0.00)

I²t mot_mod T
0 ... 20000 [s]
p0611 [D] (0)

Mot_IStandstill

I_act abs val [Arms]

not smoothed

Mot_IStandstill

Mot_temp [°C]
[8016.5]
p0035

<1>

<2>

I²t F thresh
0.0 ... 220.0 [°C]
p0615 [D] (180.0)

Threshold
0.0 ... 240.0 [°C]
p0605 [D] (145.0)

Mot_temp_mod act
-...

Mot T_ambient
-40 ... 80 [°C]
p0625 [D] (20)

Mot_Tambient

Mot temp [°C]

Threshold

Motor utilization [%]
r0034

r0068

A07012

"I²t-motor model overtemperature"

<1> Only if there is a temperature sensor (p0601 = 2).
<2> Only if <1> are not met.
Signals and monitoring functions

Function diagrams

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SINAMICS G120 CU240B/E-2 Control Units  List Manual (LH11), 01/2012

Fig. 2-136  8020 – Monitoring functions 1

fp_8020_97_53.vsd

Signals and monitoring functions

Monitoring functions 1

Function diagram

G120 CU240B/E-2
2.17 Faults and alarms

Function diagrams

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<td>Fault/alarm configuration</td>
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</table>
<1> This fault is overwritten when "more recent" faults occur.

<2> The buffer parameters are cyclically updated in the background (refer to the status signal in r2139).

Faults and warnings
Fault buffer

Faults and alarms
Fault buffer

Values are updated cyclically in the background (refer to the status signal in r2139).

Fault cases qty
Fault appears
Fault disappears
Fault case acknowledge
Fault buff change
Fault responses to the sequence control

Fault code
Fault value
Fault time "received"
Fault time "removed"

Fault 1
Fault 2
Fault 8
Fault 1
Fault 2
Fault 8
Fault 1
Fault 2
Fault 8

Fault code
r0945[0]
r0948[0] [I32]
r2133[0] [Float]
r0948[0] [ms]
r2130[0] [d]
r2136[0] [d]

Fault value
r0949[1]
r0949[1] [I32]
r2133[1] [Float]
r0949[1] [ms]
r2130[1] [d]
r2136[1] [d]

Fault times
Fault 1
Fault 2
Fault 8

Fault times
Fault 1
Fault 2
Fault 8

Acknowledged faults
Acknowledged faults
Acknowledged faults

Faults
Faults
Faults

Fault times
Fault times
Fault times

Fault code
Fault code
Fault code

Fault case
Fault case
Fault case

Faults
Faults
Faults

Fault code
Fault code
Fault code

Fault case
Fault case
Fault case

Faults
Faults
Faults

Fault times
Fault times
Fault times

Fault code
Fault code
Fault code

Fault case
Fault case
Fault case

Faults
Faults
Faults

Fault code
Fault code
Fault code

Fault case
Fault case
Fault case

Faults
Faults
Faults

Fault times
Fault times
Fault times

Fault code
Fault code
Fault code

Fault case
Fault case
Fault case

Faults
Faults
Faults

Fault times
Fault times
Fault times

Fault code
Fault code
Fault code

Fault case
Fault case
Fault case

Faults
Faults
Faults
Faults and alarms

Function diagrams
Faults and warnings

Fault/Warning trigger word (r2129)

- 8070 -
Changing the fault response for maximum 20 faults <1>  

Fault response  
0...6  
p2100 (0)  

0 = NONE  
1 = OFF1  
2 = OFF2  
3 = OFF3  
5 = STOP2  
6 = IASC/DCBRK

Changing the message type - fault <===> alarm for maximum 20 faults/alarms <1>  

Message type  
1...3  
p2119 (1)  

1 = Fault  
2 = Alarm  
3 = No message

Changing the acknowledge mode for maximum 20 faults <1>  

Acknowledge mode  
1...2  
p2127 (1)  

1 = Acknowledgment is only possible using POWER ON  
2 = Acknowledgment IMMEDIATELY after the cause has been removed.

<1> The fault response, acknowledge mode and message type for all faults and alarms are set to meaningful default values in the factory setting.

Changes that may be required are only possible in specific value ranges specified by SIEMENS.

When the message type is changed, the supplementary information is transferred from fault value r0949 to alarm value r2124 and vice versa.

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### 2.18 Data sets

**Function diagrams**

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Example:
Change over command data set
CDS0 --> CDS1

- 8560 -
Command Data Sets (CDS)

Note
Data sets can only be applied
and cleared when p0010 = 15
is set.
A BICO interconnection to a parameter which is part of a drive data set always influences the currently effective data set.

DDS select., bit 0
p0820 [C]

DDS select., bit 1
p0821 [C]

DDS count
1 ... 4
p0180 (1)

DDS selected
r0837

DDS effective
r0051

Copy DDS, source
p0819[0] (0)

Copy DDS, start
p0819[2] (0)

Copy DDS, target
p0819[1] (1)

Note: Data sets can only be applied or cleared when p0010 = 15

 DDS effective
 DDS selected
 DDS select., bit 1
 DDS select., bit 0

DDS3
DDS2
DDS1
DDS0

DDS selected
r0051

DDS effective
r0837

DDS selected
r0051

DDS effective
r0837

DDS selected
r0051
Faults and alarms

Contents

3.1 Overview of faults and alarms 3-664
3.2 List of faults and alarms 3-668
3.1 Overview of faults and alarms

3.1.1 General information

Display of faults and alarms (fault and alarm messages)

A message comprises a letter followed by the relevant number.

The letter identifies the message type and has the following meaning:

- A means "Alarm"
- F means "Fault"
- N means "No message" or "Internal message" ("No report")
- C means "Safety message"

Brackets with the letters A, F or N indicate that the message type can be changed, e.g. A01016 (F) means that the alarm A01016 can also parameterized as a fault. The letter in brackets specifies which message type can be set via parameters p2118 and p2119.

Example:

- p2118[5] = 1016 (alarm A01016 (F) "Firmware changed")
- p2119[5] = 1 (p2119 = 1 corresponds to fault (F))

This has changed the alarm "Firmware changed" to a fault.

Faults are stored in parameter r0945/r0947 under their code number (e.g. F01003 = 1003). The associated fault value can be found in parameter r0949. The value 0 is entered if a fault has no fault value. It is also possible to read out the time that a fault occurred (r0948) and the number of faults (p0952).

Faults are stored in parameter r0945/r0947 under their code number (e.g. F01003 = 1003). The associated fault value can be found in parameter r0949. The value 0 is entered if a fault has no fault value. It is also possible to read out the time that a fault occurred (r0948) and the number of faults (p0952).

The alarms are stored in parameter r2110/r2122 under their code number (e.g. A01503 = 1503) and can be read out from there. The associated alarm value can be found in parameter r2124 and the time of the alarm occurrence in r2123.
Differences between faults and alarms

The differences between faults and alarms are as follows:

Tabelle 3-1 Differences between faults and alarms

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faults</td>
<td>What happens when a fault occurs?</td>
</tr>
<tr>
<td></td>
<td>• The appropriate fault reaction is triggered.</td>
</tr>
<tr>
<td></td>
<td>• Status bit ZSW1.3 is set.</td>
</tr>
<tr>
<td></td>
<td>• The fault is entered in the fault buffer.</td>
</tr>
<tr>
<td></td>
<td>How are faults eliminated?</td>
</tr>
<tr>
<td></td>
<td>• Remove the original cause of the fault.</td>
</tr>
<tr>
<td></td>
<td>• Acknowledge the fault.</td>
</tr>
<tr>
<td>Alarms</td>
<td>What happens when an alarm occurs?</td>
</tr>
<tr>
<td></td>
<td>• Status signal ZSW1.7 is set.</td>
</tr>
<tr>
<td></td>
<td>• The alarm is entered in the alarm buffer.</td>
</tr>
<tr>
<td></td>
<td>How are alarms eliminated?</td>
</tr>
<tr>
<td></td>
<td>• Alarms acknowledge themselves. If the cause of the alarm is no longer present, they automatically reset themselves.</td>
</tr>
</tbody>
</table>
3.1.2 Fault reactions

Specifies the default reaction in the event of a fault. The optional brackets indicate whether the fault reaction can be changed and which fault reactions can be set (p2100, p2101). The following fault reactions are defined:

Table 3-2 Fault reactions

<table>
<thead>
<tr>
<th>List</th>
<th>PROFIdrive</th>
<th>Reaction Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>-</td>
<td>No reaction when a fault occurs.</td>
</tr>
<tr>
<td>OFF1</td>
<td>ON/OFF</td>
<td>Speed control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• n_set = 0 is input immediately to brake the drive along the ramp-function generator deceleration ramp (p1121).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Zero speed is detected if the actual speed drops below the threshold (p1226) or if the monitoring time (p1227) started when the speed setpoint &lt;= speed threshold (p1226) has expired.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Torque control (p1300 = 22)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The following applies for torque control:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reaction as for OFF2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• When the system switches to torque control with p1501, the following applies: There is no separate braking reaction.</td>
</tr>
<tr>
<td>OFF2</td>
<td>COAST/STOP</td>
<td>Speed and torque control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Immediate pulse suppression, the drive “coasts” to a standstill.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• &quot;Switching on inhibited&quot; is activated.</td>
</tr>
<tr>
<td>OFF3</td>
<td>QUICK/STOP</td>
<td>Speed control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• n_set = 0 is input immediately to brake the drive along the OFF3 deceleration ramp (p1135).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Zero speed is detected if the actual speed drops below the threshold (p1226) or if the monitoring time (p1227) started when the speed setpoint &lt;= speed threshold (p1226) has expired.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• &quot;Switching on inhibited&quot; is activated.</td>
</tr>
<tr>
<td>STOP2</td>
<td>-</td>
<td>Speed control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• n_set = 0 is input immediately to brake the drive along the OFF3 deceleration ramp (p1135). Although braking is performed on the OFF3 deceleration down, r0052 bit 5 = 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The drive remains in speed control mode.</td>
</tr>
<tr>
<td>IASC/DCBRK</td>
<td>-</td>
<td>Speed control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If a fault occurs with this fault reaction, DC braking is triggered.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• DC braking must have been commissioned (p1230 to p1239).</td>
</tr>
</tbody>
</table>
3.1.3 Acknowledgement of faults

The list of faults and alarms specifies how to acknowledge each fault after the cause has been remedied. The optional brackets indicate whether the default acknowledgement can be changed and which acknowledgement can be adjusted via parameters (p2126, p2127).

Table 3-3 Acknowledgement of faults

<table>
<thead>
<tr>
<th>Acknowledgement</th>
<th>Description</th>
</tr>
</thead>
</table>
| POWER ON        | The fault is acknowledged via a POWER ON (switch Control Unit off and on again).  
|                 | Note: If this action has not eliminated the fault cause, the fault is displayed again immediately after power up. |
| IMMEDIATELY     | Faults can be acknowledged as follows:  
|                 | 1 Acknowledge by setting parameter:  
|                 | p3981 = 0 --> 1  
|                 | 2 Acknowledge via binector inputs:  
|                 | p2103 Bi: 1. Acknowledge faults  
|                 | p2104 Bi: 2. Acknowledge faults  
|                 | p2105 Bi: 3. Acknowledge faults  
|                 | 3 Acknowledge using PROFIBUS control signal:  
|                 | STW1.7 = 0 --> 1 (edge)  
|                 | Note:  
|                 | • These faults can also be acknowledged by a POWER ON.  
|                 | • If this action has not eliminated the fault cause, the fault will continue to be displayed after acknowledgement. |
3.2 List of faults and alarms

Product: SINAMICS G120 CU240, Version: 4502400, Language: eng

F01000 Internal software error
Reaction: OFF2
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- evaluate fault buffer (r0945).
- carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.
- replace the Control Unit.

F01001 FloatingPoint exception
Reaction: OFF2
Acknowledge: POWER ON
Cause: An exception occurred during an operation with the FloatingPoint data type.
The error may be caused by the base system or an OA application (e.g., FBLOCKS, DCC).
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Note:
Refer to r9999 for further information about this fault.
r9999[0]: Fault number.
r9999[1]: Program counter at the time when the exception occurred.
r9999[2]: Cause of the FloatingPoint exception.
Bit 0 = 1: Operation invalid
Bit 1 = 1: Division by zero
Bit 2 = 1: Overflow
Bit 3 = 1: Underflow
Bit 4 = 1: Imprecise result
Remedy:
- carry out a POWER ON (power off/on) for all components.
- check configuration and signals of the blocks in FBLOCKS.
- check configuration and signals of DCC charts.
- upgrade firmware to later version.
- contact the Hotline.

F01002 Internal software error
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
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

**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** An internal software error has occurred.  
Fault value (r0949, hexadecimal):  
- 000B = internal software error.  
Only for internal Siemens troubleshooting.  
**Remedy:**  
- read out diagnostics parameter (r9999).  
- contact the Hotline.  
See also: r9999 (Software error internal supplementary diagnostics)

### F01005 File upload/download error

**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** The upload or download of EEPROM data was unsuccessful.  
Fault value (r0949, interpret hexadecimal):  
- yyxxxx hex: yy = component number, xxxx = fault cause  
  - xxxx = 000B hex = 11 dec: Power unit component has detected a checksum error.  
  - xxxx = 000F hex = 15 dec: The selected power unit will not accept the content of the EEPROM file.  
  - xxxx = 0011 hex = 17 dec: Power unit component has detected an internal access error.  
  - xxxx = 0012 hex = 18 dec: After several communication attempts, no response from the power unit component.  
  - xxxx = 008B hex = 140 dec: EEPROM file for the power unit component not available on the memory card.  
  - xxxx = 008D hex = 141 dec: An inconsistent length of the firmware file was signaled. It is possible that the download/upload has been interrupted.  
  - xxxx = 0090 hex = 144 dec: When checking the file that was loaded, the component detected a fault (checksum). It is possible that the file on the memory card is defective.  
  - xxxx = 0092 hex = 146 dec: This SW or HW does not support the selected function.  
  - xxxx = 009C hex = 156 dec: Component with the specified component number is not available (p7828).  
  - xxxx = Additional values: Only for internal Siemens troubleshooting.  
**Remedy:**  
- Save a suitable firmware file or EEPROM file for upload or download in folder "ee_sac/" on the memory card.

### A01009 (N) CU: Control module overtemperature

**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The temperature (r0037[0]) of the control module (Control Unit) has exceeded the specified limit value.  
**Remedy:**  
- check the air intake for the Control Unit.  
- check the Control Unit fan.  
**Note:**  
The alarm automatically disappears after the limit value has been undershot.

### F01010 Drive type unknown

**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** An unknown drive type was found.  
**Remedy:**  
- replace Power Module.  
- carry out a POWER ON (power off/on).  
- upgrade firmware to later version.  
- contact the Hotline.
### List of faults and alarms

#### F01015 Internal software error
- **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
- **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)

#### A01017 Component lists changed
- **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, x = 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
- **Remedy:**
  - For the file on the memory card involved, restore the status originally supplied from the factory.

#### F01018 Booting has been interrupted several times
- **Reaction:** NONE
- **Acknowledge:** POWER ON
- **Cause:** Module booting was interrupted several times.
  Possible reasons for booting being interrupted:
  - POWER OFF of the module.
  - CPU crash.
  - USER data invalid.
  After this fault is output, then the module is booted with the factory settings.
Remedy: Power down the module and power it up again.

Note: After switching on, the module reboots from the USER data (if available).
If the fault situation is repeated, then this fault is again output after several interrupted boots.

A01019  Writing to the removable data medium unsuccessful
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
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)

A01021  Removable data medium as USB data storage medium from the PC used
Reaction: NONE
Acknowledge: NONE
Cause: The removable data medium is used as USB data storage medium from a PC. As a consequence, the drive cannot access the removable data medium. When backing up, the configuration data cannot be saved on the removable data medium.
Fault value (r0949, interpret decimal):
1: The know-how protection as well as the copy protection for the removable data medium is active. Backup is inhibited.
2: The configuration data are only backed up in the CU.
See also: r7760 (Write protection/know-how protection status), r9401 (Safely remove memory card status)
Remedy: Deactivate the USB connection to the PC and back up the configuration data.
Note: The alarm is automatically canceled when disconnecting the USB connection or when removing the removable data medium.
See also: r9401 (Safely remove memory card status)

F01023  Software timeout (internal)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An internal software timeout has occurred.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.

A01028  Configuration error
Reaction: NONE
Acknowledge: NONE
Cause: The parameterization that was downloaded was generated with a different module type (Order No., MLFB).
Remedy: Save parameters in a non-volatile fashion (p0971 = 1).

F01030  Sign-of-life failure for master control
Reaction: OFF3 (IASC/DCBRAKE, 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.
Faults and alarms

List of faults and alarms

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!

F01033 Units changeover: Reference parameter value invalid
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: p0505 (Selecting the system of units), p0595 (Technological unit selection)
Remedy: Set the value of the reference parameter to a number different than 0.0.

F01034 Units changeover: Calculation parameter values after reference value change unsuccessful
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The change of a reference parameter meant that for an involved parameter the selected value was not able to be re-
calculated in the per unit representation. The change was rejected and the original parameter value restored.
Fault value (r0949, parameter):
Parameter whose value was not able to be re-calculated.
Remedy: Select the value of the reference parameter such that the parameter involved can be calculated in the per unit
representation.

A01035 (F) ACX: Parameter back-up file corrupted
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):
ddccbbaa hex:
  aa = 01 hex:
  Power up was realized without data backup. The drive is in the factory setting.
  aa = 02 hex:
  The last available internal backup data record was loaded. The parameterization must be checked. It is
  recommended that the parameterization is downloaded again.
  aa = 03 hex:
  The last available data record from the memory card was loaded. The parameterization must be checked.
  aa = 04 hex:
  An invalid data backup was loaded from the memory card into the drive. The drive is in the factory setting.
  dd, cc, bb:
  Only for internal Siemens troubleshooting.
  See also: p0971 (Save parameters)
Remedy: - Download the project again with the commissioning software.
- save all parameters (p0971 = 1 or "copy RAM to ROM")

F01036 (A) ACX: Parameter back-up file missing
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
  yyy = 099 --> PROFIBUS parameter back-up file
Byte 2, 3, 4:
  Only for internal Siemens troubleshooting.

**Remedy:**
If you have saved the project data using the commissioning software, carry out a new download for your project.
Save using the function "Copy RAM to ROM" or with p0971 = 1 so that all of the parameter files are again completely written to the non-volatile memory.
If you have not saved the project data, then first commissioning of the system has to be carried out again.

**F01038 (A) ACX: Loading the parameter back-up file unsuccessful**

**Reaction:**
NONE (OFF1, OFF2, OFF3)

**Acknowledge:**
IMMEDIATELY

**Cause:**
An error has occurred when downloading PSxxxxyy.ACX or PTxxxxxyy.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 p0971 = 1 so that all of the parameter files are again completely written to the non-volatile memory.
- replace the memory card or Control Unit.

**F01039 (A) ACX: Writing to the parameter back-up file was unsuccessful**

**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 PSxxxxyy.***
  a = 000 --> consistency back-up file
  a = 001 ... 062 --> drive object number
  a = 099 --> PROFIBUS parameter back-up file
  b = xxx in the file names PSxxxxxyy.***
  b = 000 --> data save started with p0971 = 1
  b = 010 --> data save started with p0971 = 10
  b = 011 --> data save started with p0971 = 11
  b = 012 --> data save started with p0971 = 12
  d, c:
Only for internal Siemens troubleshooting.
Faults and alarms

List of faults and alarms

Remedy:
- check the file attribute of the files (PSxxxxx.***, CAxxxxx.***, CCxxxxx.***) 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.

F01040  Save parameter settings and carry out a POWER ON
Reaction:  OFF2
Acknowledgment:  POWER ON
Cause:  A parameter has been changed that requires the parameters to be backed up and the Control Unit to be switched OFF and ON again.
Remedy:
- Save parameters (p0971).
- carry out a POWER ON (power off/on) for the Control Unit.

F01042  Parameter error during project download
Reaction:  OFF2 (NONE, OFF1, OFF3)
Acknowledgment:  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):
cbbaaaa 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.
108: Unit unknown.
Additional values:
Only for internal Siemens troubleshooting.
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
Reaction:  OFF2 (OFF1, OFF3)
Acknowledgment:  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.
8: Maximum number of drive objects that can be generated exceeded.
11: Error while generating a drive object (global component).
12: Error while generating a drive object (drive component).
13: Unknown drive object type.
14: Drive status cannot be changed to "ready for operation" (p0947 and p0949).
15: Drive status cannot be changed to drive download.
16: Device status cannot be changed to "ready for operation".
18: A new download is only possible if the factory settings are restored for the drive unit.
20: The configuration is inconsistent.
21: Error when accepting the download parameters.
22: SW-internal download error.
100: The download was canceled, because no write requests were received from the commissioning client. (e.g. for interrupted communication).

**Remedy:**
- use the current version of the commissioning software.
- modify the offline project and download again (e.g. compare the motor and Power Module in the offline project and on 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 p0970=10, ...).

**F01044 **
**CU: Descriptive data error**

**Reaction:** OFF2

**Acknowledge:** POWER ON

**Cause:** An error was detected when loading the descriptive data saved in the non-volatile memory.

**Remedy:**
- Check the parameters displayed in r9406 up to r9408, and correct these if required.
- Restore the factory setting using (p0970 = 1) and re-load the project into the drive unit.

**F01054 **
**CU: System limit exceeded**

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** At least one system overload has been identified.

Fault value (r0949, interpret decimal):
1: Computing time load too high (r9976[1]).
5: Peak load too high (r9976[5]).
See also: r9976 (System utilization)

**Remedy:**
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).

**A01064 (F) CU: Internal error (CRC)**

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** CRC error in the Control Unit program memory

**Remedy:**
- carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.

**A01066 Buffer memory: 70% fill level reached or exceeded**

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The non-volatile buffer memory for parameter changes is filled to at least 70%.
This can also occur if the buffer memory is active (p0014 = 1) and parameters are continually changed via a fieldbus system.

**Remedy:**
- If required, de-activate and clear the buffer memory (p0014 = 0).
- If required, clear the buffer memory (p0014 = 2).
- In the following cases, the entries in the buffer memory are transferred into the ROM and then the buffer memory is cleared:
  - p0971 = 1
  - power down/power up the Control Unit
- See also: p0014 (Buffer memory mode)

**A01067 Buffer memory: 100 % fill level reached**

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The non-volatile buffer memory for parameter changes is filled to 100%.
All additional parameter changes will no longer be taken into account in the non-volatile buffer memory. However, parameter changes can still be made in the volatile memory (RAM).
This can also occur if the buffer memory is active (p0014 = 1) and parameters are continually changed via a fieldbus system.

**Remedy:**
- If required, de-activate and clear the buffer memory (p0014 = 0).
- If required, clear the buffer memory (p0014 = 2).
- In the following cases, the entries in the buffer memory are transferred into the ROM and then the buffer memory is cleared:
  - p0971 = 1
  - power down/power up the Control Unit
- See also: p0014 (Buffer memory mode)

**F01068 CU: Data memory, memory overflow**

**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

**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).

### F01105 (A)  CU: Insufficient memory

**Reaction:** OFF1  
**Acknowledge:** POWER ON  
**Cause:** Too many data sets are configured on this Control Unit. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.  
**Remedy:**  
- reduce the number of data sets.

### F01107  Save to memory card unsuccessful

**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** A data save to the memory card was not able to be successfully carried out.  
- Memory card is defective  
- Insufficient space on memory card. Fault value (r0949, interpret decimal):  
1: The file on the RAM was not able to be opened.  
2: The file on the RAM was not able to be read.  
3: A new directory could not be created on the memory card.  
4: A new file could not be created on the memory card.  
5: A new file could not be written on the memory card.  
**Remedy:**  
- try to save again.  
- replace the memory card or Control Unit.

### F01112  CU: Power unit not permissible

**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., PM340).  
**Remedy:** Replace the power unit that is not permissible by a component that is permissible.

### F01120 (A)  Terminal initialization has failed

**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.
### F01122 (A)
**Frequency at the measuring probe input too high**

**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 1 (term. 6)
2: DI 3 (term. 8)

**Remedy:** Reduce the frequency of the pulses at the measuring probe input.

### F01205
**CU: Time slice overflow**

**Reaction:** OFF2

**Acknowledge:** POWER ON

**Cause:** Insufficient computation time.

Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

**Remedy:** Contact the Hotline.

### F01250
**CU: CU-EEPROM incorrect read-only data**

**Reaction:** NONE (OFF2)

**Acknowledge:** POWER ON

**Cause:** Error when reading the read-only data of the EEPROM in the Control Unit.

Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

**Remedy:**
- carry out a POWER ON.
- replace the Control Unit.

### A01251
**CU: CU-EEPROM incorrect read-write data**

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** Error when reading the read-write data of the EEPROM in the Control Unit.

Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.

**Remedy:**
- For alarm value r2124 < 256, the following applies:
  - carry out a POWER ON.
  - replace the Control Unit.
- For alarm value r2124 >= 256, the following applies:
  - clear the fault memory (p0952 = 0).
  - replace the Control Unit.

### F01257
**CU: Firmware version out of date**

**Reaction:** OFF2

**Acknowledge:** POWER ON

**Cause:** The Control Unit firmware is too old.

Fault value (r0949, interpret hexadecimal):
bbbbbaa hex: aa = unsupported component
bbbbbbaa hex: aa = unsupported component
aa = 01 hex = 1 dec: The firmware being used does not support the Control Unit.
aa = 02 hex = 2 dec: The firmware being used does not support the Control Unit.
aa = 03 hex = 3 dec: The firmware being used does not support the Power Module.
aa = 04 hex = 4 dec: The firmware being used does not support the Control Unit.

**Remedy:**
- upgrade the firmware of the Control Unit.
- For fault value = 3:
  - Upgrade the firmware of the Control Unit.
  - Replace the Power Module by a component that is supported.
### F01340

**Topology: Too many components on one line**

**Reaction:**
NONE

**Acknowledge:**
IMMEDIATELY

**Cause:**
For the selected communications clock cycle, too many DRIVE-CLiQ components are connected to one line of the Control Unit.

Fault value (r0949, interpret hexadecimal):

- xyy hex: x = fault cause, yy = component number or connection number.
- 1yy:
  The communications clock cycle of the DRIVE-CLiQ connection on the Control Unit is not sufficient for all read transfers.
- 2yy:
  The communications clock cycle of the DRIVE-CLiQ connection on the Control Unit is not sufficient for all write transfers.
- 3yy:
  Cyclic communication is fully utilized.
- 4yy:
  The DRIVE-CLiQ cycle starts before the earliest end of the application. An additional dead time must be added to the control. Sign-of-life errors can be expected.
- 5yy:
  The conditions of operation with a current controller sampling time of 31.25 µs have not been maintained.
- 6yy:
  Internal buffer overflow for net data of a DRIVE-CLiQ connection.
- 7yy:
  Internal buffer overflow for receive data of a DRIVE-CLiQ connection.
- 8yy:
  Internal buffer overflow for send data of a DRIVE-CLiQ connection.
- 9yy:
  Internal buffer overflow for receive data of a DRIVE-CLiQ connection.

**Remedy:**
- check the DRIVE-CLiQ connection.
- Reduce the number of components on the DRIVE-CLiQ line involved and distribute these to other DRIVE-CLiQ sockets of the Control Unit. This means that communication is uniformly distributed over several lines.
- Increase the sampling times (p0112, p0115, p4099). If necessary, for DCC or FBLOCKS, change the assignment of the run-time group (p21000, p20000) so that the sampling time (r21001, r20001) is increased.
- Reduce the function modules (r0108).
- Establish the conditions for operation with a current controller sampling time of 31.25 µs (at the DRIVE-CLiQ line, only operate Motor Modules and Sensor Modules with this sampling time and only use a permitted Sensor Module (e.g. SMC20, this means a 3 at the last position of the order number)).
- For an NX, the corresponding Sensor Module for a possibly existing second measuring system should be connected to a free DRIVE-CLiQ socket of the NX.

**Fault value = 1yy - 4yy in addition:**
- increase the sampling times (p0112, p0115, p4099). If necessary, for DCC or FBLOCKS, change the assignment of the run-time group (p21000, p20000) so that the sampling time (r21001, r20001) is increased.
- Reduce the function modules (r0108).
- Establish another interconnection.

**Fault value = 5yy in addition:**
- check the clock cycles settings (p0112, p0115, p4099). If necessary, for DCC or FBLOCKS, change the assignment of the run-time group (p21000, p20000) so that the sampling time (r21001, r20001) is increased.

**Fault value = 6yy in addition:**
- check the clock cycles settings (p0112, p0115, p4099). Clock cycles on a DRIVE-CLiQ line must be perfect integer multiples of one another. As clock cycle on a line, all clock cycles of all drive objects in the previously mentioned parameters apply, which have components on the line involved.

**Fault value = 7yy in addition:**
- check the clock cycles settings (p0112, p0115, p4099). The lower the numerical value difference between two clock cycles, the higher the lowest common multiple. This behavior has a significantly stronger influence, the higher the numerical values of the clock cycles.

### F01505 (A)

**BICO: Interconnection cannot be established**

**Reaction:**
NONE

**Acknowledge:**
IMMEDIATELY

**Cause:**
A PROFdrive 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.
### Faults and alarms

#### List of faults and alarms

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<tr>
<td>F01510</td>
<td>BICO: Signal source is not float type</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>BICO: Interconnection with different scalings</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.</td>
<td></td>
</tr>
<tr>
<td>F01512</td>
<td>BICO: No scaling available</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.</td>
<td>Not necessary.</td>
</tr>
<tr>
<td>F01513 (A)</td>
<td>BICO: Interconnection cross DO with different scalings</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>

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**Fault value (r0949, interpret decimal):**
- Parameter number to which an interconnection should be made (connector output).
- Parameter number of the BICO input (signal sink).

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**Remedy:**
- Interconnect this connector input with a connector output having a float data type.
- Not necessary.
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<tr>
<td>A01514 (F)</td>
<td>BICO: Error when writing during a reconnect</td>
<td>NONE</td>
<td>NONE</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. Alarm value (r2124, interpret decimal): Parameter number of the BICO input (signal sink).</td>
<td>Not necessary.</td>
</tr>
<tr>
<td>F01515 (A)</td>
<td>BICO: Writing to parameter not permitted as the master control is active</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>When changing the number of CDS or when copying from CDS, the master control is active.</td>
<td>If required, return the master control and repeat the operation.</td>
</tr>
<tr>
<td>A01590 (F)</td>
<td>Drive: Motor maintenance interval expired</td>
<td>NONE</td>
<td>NONE</td>
<td>The selected service/maintenance interval for this motor was reached.</td>
<td>carry out service/maintenance and reset the service/maintenance interval (p0651).</td>
</tr>
<tr>
<td>F01600</td>
<td>SI P1: STOP A initiated</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The drive-integrated &quot;Safety Integrated&quot; function on processor 1 has detected an error and initiated a STOP A. - forced checking procedure of the safety shutdown path on processor 1 unsuccessful. - subsequent response to fault F01611 (defect in a monitoring channel). Fault value (r0949, interpret decimal): 0: Stop request from processor 2. 1005: Pulses suppressed although STO not selected and there is no internal STOP A present. 1010: Pulses enabled although STO is selected or an internal STOP A is present. 9999: Subsequent response to fault F01611.</td>
<td>- select Safe Torque Off and de-select again. For fault value = 9999; - carry out diagnostics for fault F01611. Note: STO: Safe Torque Off</td>
</tr>
</tbody>
</table>
| F01611    | SI P1: Defect in a monitoring channel                                          | NONE (OFF1, OFF2, OFF3) | IMMEDIATELY (POWER ON) | The drive-integrated "Safety Integrated" function on processor 1 has detected a fault in the crosswise data comparison between the two monitoring channels and has initiated a STOP F. Fault F01600 (SI P1: STOP A initiated) is output as a consequence of this fault. Fault value (r0949, interpret decimal): 0: Stop request from processor 2. 1 ... 999: Number of the cross-compared data that resulted in this fault. This number is also displayed in r9795. 2: SI enable safety functions (p9601, p9801). Crosswise data comparison is only carried out for the supported bits. 3: SI F-DI changeover tolerance time (p9650, p9850). 8: SI PROFI safe address (p9610, p9810). | \begin{itemize} 
|   \item For fault value = 9999; 
|   \item - select Safe Torque Off and de-select again. 
|   \item - carry out diagnostics for fault F01611. 
|   \item Note: STO: Safe Torque Off 
| \end{itemize} |
9: SI debounce time for STO (p9651, p9851).

1000: Watchdog timer has expired.
Within the time of approx. 5 x p9650, alternatively, the following was defined:
- Too many switching operations have occurred at the F-DI.
- Via PROFIsafe, STO was too frequently initiated (also as subsequent response).
1001, 1002: Initialization error, change timer / check timer.
2000: Status of the STO selection for both monitoring channels are different.
2001: Feedback of the safe pulse suppression on the two monitoring channels are different.
6000 ... 6999: Error in the PROFI safe control.
For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
The significance of the individual message values is described in safety message C01711.

Remedy:
Re fault values 1 ... 999 described in "Cause":
- check the cross data comparison that resulted in a STOP F.
- carry out a POWER ON (power off/on).
For fault value = 1000:
- check the wiring of the F-DI (contact problems).
- PROFIsafe: Remove contact problems/faults at the PROFIBUS master/PROFINET controller.
Re fault value = 1001, 1002:
- carry out a POWER ON (power off/on).
- check the tolerance time F-DI changeover and if required, increase the value (p9650/p9850).
- check the wiring of the F-DI (contact problems).
- check the causes of the STO selection in r9772. When the SI Motion functions are active (p9501 = 1), STO can also be selected using these functions.
Re fault value = 6000 ... 6999:
Refer to the description of the message values in safety message C01711.
Re fault values that are described in "Cause":
- carry out a POWER ON (power off/on).
- contact the Hotline.
- replace Control Unit.
Note:
F-DI: Failsafe Digital Input
STO: Safe Torque Off

N01620 (F, A) SI P1: Safe Torque Off active

Reaction: NONE
Acknowledge: NONE
Cause: The "Safe Torque Off" (STO) function has been selected on processor 1 using the input terminal and is active.
Note:
This message does not result in a safety stop response.
Remedy: Not necessary.
Note:
STO: Safe Torque Off

F01625 SI P1: Sign-of-life error in safety data

Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
The drive-integrated "Safety Integrated" function on processor 1 has detected an error in the sign-of-life of the safety data and initiated a STOP A.
- there is a communication error between processor 1 and processor 2 or communication has failed.
- a time slice overflow of the safety software has occurred.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy:
- select Safe Torque Off and de-select again.
- carry out a POWER ON (power off/on).
- check whether additional faults are present and if required, perform diagnostics.
- check the electrical cabinet design and cable routing for EMC compliance
## List of faults and alarms

### F01649 SI P1: Internal software error

**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** An internal error in the Safety Integrated software on processor 1 has occurred.  
**Note:** This fault results in a STOP A that cannot be acknowledged.  
**Fault value (r0949, interpret hexadecimal):**  
- Only for internal Siemens troubleshooting.  
**Remedy:**  
- carry out a POWER ON (power off/on).  
- re-commission the "Safety Integrated" function and carry out a POWER ON.  
- contact the Hotline.  
- replace Control Unit.

### F01650 SI P1: Acceptance test required

**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The drive-integrated "Safety Integrated" function on processor 1 requires an acceptance test.  
**Note:** This fault results in a STOP A that can be acknowledged.  
**Fault value (r0949, interpret decimal):**  
130: Safety parameters for processor 2 not available.  
**Note:** This fault value is always output when Safety Integrated is commissioned for the first time.  
1000: Reference and actual checksum on processor 1 are not identical (booting).  
- at least one checksum-checked piece of data is defective.  
- Safety parameters set offline and loaded into the Control Unit.  
- reference checksum correctly entered on processor 1 (p9799 not equal to r9798).  
- when de-activating the safety functions, p9501 was not deleted.  
2001: Reference and actual checksum on processor 2 are not identical (commissioning mode).  
- reference checksum incorrectly entered on processor 2 (p9899 not equal to r9898).  
- when de-activating the safety functions, p9501 was not deleted.  
2002: Enable of safety-related functions between the processor 1 and processor 2 differ (p9601 not equal to p9801).  
2003: Acceptance test is required as a safety parameter has been changed.  
2004: An acceptance test is required because a project with enabled safety-functions has been downloaded.  
2005: The Safety logbook has identified that a functional safety checksum has changed. An acceptance test is required.  
2020: Error when saving the safety parameters for the processor 2.  
9999: Subsequent response of another safety-related fault that occurred when booting that requires an acceptance test.  
**Remedy:**  
For fault value = 130:  
- carry out safety commissioning routine.  
For fault value = 1000:  
- again carry out safety commissioning routine.  
- replace the memory card or Control Unit.  
- Using STARTER, activate the safety parameters for the drive involved (change settings, copy parameters, activate settings).  
For fault value = 2000:  
- check the safety parameters on processor 1 and adapt the reference checksum (p9799).  
For fault value = 2001:  
- check the safety parameters on processor 2 and adapt the reference checksum (p9899).  
For fault value = 2002:  
- enable the safety-related functions on processor 1 and check processor 2 (p9601 = p9801).  
For fault value = 2003, 2004, 2005:  
- Carry out an acceptance test and generate an acceptance report.  
The fault with fault value 2005 can only be acknowledged when the "STO" function is de-selected.  
For fault value = 2020:  
- again carry out safety commissioning routine.  
- replace the memory card or Control Unit.  
For fault value = 9999:  
- carry out diagnostics for the other safety-related fault that is present.
Faults and alarms

List of faults and alarms

Note:
STO: Safe Torque Off
See also: p9799 (SI setpoint checksum SI parameters (processor 1)), p9899 (SI setpoint checksum SI parameters (processor 2))

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<tbody>
<tr>
<td>F01651</td>
<td>SI P1: Synchronization safety time slices unsuccessful</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The &quot;Safety Integrated&quot; function requires synchronization of the safety time slices between processor 1 and processor 2. This synchronization was unsuccessful.</td>
<td>- carry out a POWER ON (power off/on).</td>
</tr>
<tr>
<td>F01653</td>
<td>SI P1: PROFIBUS/PROFINET configuration error</td>
<td>NONE (OFF1, OFF2, OFF3)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>There is a PROFIBUS/PROFINET configuration error for using Safety Integrated monitoring functions with a higher-level control.</td>
<td>- check and, if necessary, correct the PROFIBUS/PROFINET configuration of the safety slot on the master side. - upgrade the Control Unit software. - remove the PROFIsafe configuring in the higher-level F control or enable PROFIsafe in the drive.</td>
</tr>
<tr>
<td>A01654 (F)</td>
<td>SI P1: Deviating PROFIsafe configuration</td>
<td>NONE</td>
<td>NONE</td>
<td>The configuration of a PROFIsafe telegram in the higher-level control (F-PLC) does not match the parameterization in the drive.</td>
<td>- PROFIsafe telegram 30 must be configured.</td>
</tr>
</tbody>
</table>

Fault value (r0949, interpret decimal):
- 200: A safety slot for receive data from the control has not been configured.
- 210, 220: The configured safety slot for the receive data from the control has an unknown format.
- 230: The configured safety slot for the receive data from the F-PLC has the incorrect length.
- 231: The configured safety slot for the receive data from the F-PLC has the incorrect length.
- 250: A PROFIsafe slot is configured in the higher-level F control, however PROFIsafe is not enabled in the drive.
- 300: A safety slot for the send data to the control has not been configured.
- 310, 320: The configured safety slot for the send data to the control has an unknown format.
- 330: The configured safety slot for the send data to the F-PLC has the incorrect length.
- 331: The configured safety slot for the send data to the F-PLC has the incorrect length.

Note:
For safety functions that have been enabled, this fault results in a STOP A that cannot be acknowledged.

Alarm value (r2124, interpret decimal):
- 1: A PROFIsafe telegram is configured in the higher-level control, however PROFIsafe is not enabled in the drive (p9601.3).
- 2: PROFIsafe is parameterized in the drive; however, a PROFIsafe telegram has not been configured in the higher-level control.
Remedy: The following generally applies:
- check and, if necessary, correct the PROFIsafe configuration in the higher-level control.
Re alarm value = 1:
- remove the PROFIsafe configuring in the higher-level F control or enable PROFIsafe in the drive.
Re alarm value = 2:
- configure the PROFIsafe telegram to match the parameterization in the higher-level F-control.

F01655 SI P1: Align monitoring functions
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An error has occurred when aligning the Safety Integrated monitoring functions on processor 1 and processor 2. No common set of supported SI monitoring functions was able to be determined.
- there is a communication error between processor 1 and processor 2 or communication has failed.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret hexadecimal):
- F01655 SI P1: Parameter processor 2 parameter error
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: When accessing the Safety Integrated parameters for the processor 2 in the non-volatile memory, an error has occurred.
Note:
This fault results in a STOP A that can be acknowledged.
Fault value (r0949, interpret decimal):
- 129: Safety parameters for processor 2 corrupted.
- 131: Internal software error
- 132: Communication errors when uploading or downloading the safety parameters.
- 255: Internal software error on the Control Unit.
Remedy:
- re-commission the safety functions.
- replace the memory card or Control Unit.
For fault value = 129:
- activate the safety commissioning mode (p0010 = 95).
- adapt the PROFIsafe address (p9610).
- start the copy function for SI parameters (p9700 = D0 hex).
- acknowledge data change (p9701 = DC hex).
- exit the safety commissioning mode (p0010 = 0).
- save all parameters (p0971 = 1 or "copy RAM to ROM").
- carry out a POWER ON (power off/on) for the Control Unit.
For fault value = 132:
- check the electrical cabinet design and cable routing for EMC compliance

F01659 SI P1: Write request for parameter rejected
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The write request for one or several Safety Integrated parameters on processor 1 was rejected.
Note:
This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
- 1: The Safety Integrated password is not set.
- 2: A reset of the drive parameters was selected. However, the Safety Integrated parameters were not reset, as Safety Integrated is presently enabled.
- 3: The interconnected STO input is in the simulation mode.
- 10: An attempt was made to enable the STO function although this cannot be supported.
- 14: An attempt was made to enable the PROFIsafe communications although this cannot be supported.
- 15: An attempt was made to enable the motion monitoring functions integrated in the drive although these cannot be supported.
- 18: An attempt was made to enable the PROFIsafe function for Basic Functions although this cannot be supported.
Faults and alarms

List of faults and alarms

20: An attempt was made to simultaneously enable both the drive-integrated motion monitoring functions via integrated F-DI and STO via terminals, even though these cannot be supported at the same time.

21: An attempt was made to enable the Safety Integrated functions although these cannot be supported by the connected Power Module.

26: At a digital input of the Control Unit, an attempt was made to activate the simulation mode (p0795), which is used by Safety Integrated (p10049).

See also: p0970, p3900, r9771, r9871

Remedy:

For fault value = 1:
- set the Safety Integrated password (p9761).
For fault value = 2:
- Inhibit Safety Integrated (p9501, p9601) or reset safety parameters (p0970 = 5), then reset the drive parameters again.
For fault value = 3:
- end the simulation mode for the digital input (p0795).
Re fault value = 10, 14, 15, 18, 20:
- check whether there are faults in the safety function alignment (F01655, F30655) and if required, carry out diagnostics for the faults involved.
- use a Control Unit that supports the required function.
For fault value = 21:
- use a Power Module that supports the Safety Integrated functions.
For fault value = 26:
- check whether p10049 is set. Also check p10006 and p10009. Check whether in p10046, p10047 a test top of the FDO with a read back input is parameterized.

Note:
STO: Safe Torque Off
See also: p9501, p9601, p9761, p9801

F01660 SI P1: Safety-related functions not supported

Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The Power Module does not support the safety-related functions. Safety Integrated cannot be commissioned.
Note: This fault does not result in a safety stop response.
Remedy:
- use a Power Module that supports the safety-related functions.

F01661 SI CU: Simulation of the safety inputs active

Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The simulation of the digital inputs of the Control Unit (p0795) is active.
It is not permissible that safety inputs (refer to p9620, p10022 ... p10032) are simulated. Fault value (r0949, interpret binary):
The display bits indicate which DIs may not be simulated.
Remedy:
Deactivate the simulation of the digital inputs of the Control Unit for the safety inputs (refer to p795) and acknowledge the fault.

F01662 Error internal communications

Reaction: OFF2
Acknowledge: POWER ON
Cause: A module-internal communication error has occurred.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- carry out a POWER ON (power off/on).
- upgrade firmware to later version.
- contact the Hotline.
### F01663  SI P1: Copying the SI parameters rejected

**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** One of the following values is saved in p9700 or was entered offline: 87 or 208. This is the reason that when booting, an attempt is made to copy SI parameters from processor 1 to processor 2. However, no safety-relevant function has been selected on processor 1 (p9501 = 0, p9601 = 0). This is the reason that copying is not possible.  
**Note:** This fault does not result in a safety stop response. See also: p9700 (SI copy function)  
**Remedy:**  
- Set p9700 to 0.  
- Check p9501 and/or p9601 and if required, correct.  
- Restart the copying function by entering the corresponding value into p9700.

### F01665  SI P1: System is defective

**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** A system defect was detected before the last boot or in the actual one. The system might have been rebooted (reset). Fault value (r0949, interpret hexadecimal):  
200000 hex, 400000 hex, 8000yy hex (yy any):  
- Fault in the actual booting/operation.  
800004 hex:  
- Parameters p9500/p9300 are, under certain circumstances, not the same. In addition, Safety message C01711/C30711 is displayed. Additional values:  
- defect before the last time that the system booted.  
**Remedy:**  
- carry out a POWER ON (power off/on).  
- upgrade firmware to later version.  
- contact the Hotline.  
Re fault value = 200000 hex, 400000 hex, 8000yy hex (yy any):  
- ensure that the Control Unit is connected to the Power Module.  
Re fault value = 800004 hex:  
- Check that parameters p9500/p9300 are the same.

### A01666 (F)  SI Motion P1: Steady-state (static) 1 signal at the F-DI for safety-relevant acknowledgement

**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** A logical 1 signal is present at the F-DI configured in p10006 for more than 10 seconds. If, at the F-DI no acknowledgment was performed for safe acknowledgment, then a steady-state logical and 0 signal must be present. This avoids unintentional safety-relevant acknowledgement (or the "Internal Event Acknowledge" signal) if a wire breaks or one of the two digital inputs bounces.  
**Remedy:** Set the fail-safe digital input (F-DI) to a logical 0 signal (p10006).  
**Note:** F-DI: Failsafe Digital Input

### A01669 (F, N)  SI Motion: Unfavorable combination of motor and power unit

**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The combination of motor and power unit used is not suitable for using safe motion monitoring functions without an encoder. The ratio between the power unit rated current (r0207[0]) and rated motor current (p0305) is greater than 5. Alarm value (r2124, interpret decimal): Number of the motor data set, which caused the fault.  
**Notice:** If this alarm is not observed, then message C01711 or C30711 – with the value 1041 ... 1044 – can sporadically occur.  
**Remedy:** Use a suitable power unit with a lower power rating or a motor with a higher power rating.
Faults and alarms
List of faults and alarms

F01680  SI Motion P1: Checksum error safety monitoring functions
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The actual checksum calculated by the drive and entered in r9728 via the safety-relevant parameters does not match the reference checksum saved in p9729 at the last machine acceptance. Safety-relevant parameters have been changed or a fault is present.
Note: This fault results in a STOP A that can be acknowledged. Fault value (r0949, interpret decimal): 0: Checksum error for SI parameters for motion monitoring. 1: Checksum error for SI parameters for actual values. 2: Checksum error for SI parameters for component assignment.
Remedy:
- check the safety-relevant parameters and if required, correct.
- execute the function "Copy RAM to ROM".
- perform a POWER ON if safety parameters requiring a POWER ON have been modified.
- carry out an acceptance test.

F01681  SI Motion P1: Incorrect parameter value
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The parameter cannot be parameterized with this value.
Note: This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
yyyyxxx dec:
yyyy = supplementary information,
xxx = parameter
yyyy = 0: no additional information available.
xxx = 9501: It is not permissible to enable the function "n<nx hysteresis and filtering" (p9501.16) in conjunction with the function "extended functions without selection" (p9601.5).
xxx = 9522: The gear stage was set too high.
xxx = 9547:
p9547 is too low.
xxx = 9585: For Safety without encoder and synchronous motor, a value of 4 must be entered into p9585.
Remedy: Correct the parameter value.
With hysteresis/filtering enabled (p9501.16 = 1), the following applies:
- Set parameters p9546/p9346 and p9547/p9347 acc. to the following rule: p9546 >= 2 x p9547; p9346 >= 2 x p9347.
xxx = 9522:
xxx = 9585:
- Correct parameters.

F01682  SI Motion P1: Monitoring function not supported
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The monitoring function enabled in p9501, p9601 or p9801 is not supported in this firmware version.
Note: This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret decimal):
1: Monitoring function SLP not supported (p9501.1).
2: Monitoring function SCA not supported (p9501.7 and p9501.8 ... 15).
3: Monitoring function SLS override not supported (p9501.5).
4: Monitoring function external ESR activation not supported (p9501.4).
5: Monitoring function F-DI in PROFIsafe not supported (p9501.30).
6: Enable actual value synchronization not supported (p9501.3).
9: Monitoring function not supported by the firmware or enable bit not used.
11: Only encoderless monitoring functions integrated in the drive are supported.
12: Safety Integrated for SINUMERIK is not supported on this Control Unit.
20: Motion monitoring functions integrated in the drive are only supported in conjunction with PROFIsafe (p9501/p9601.1 ... 2 and p9801.1 ... 2).
21: PROFIsafe only supported in conjunction with motion monitoring functions integrated in the drive (p9501/p9601.1 ... 2 and p9801.1 ... 2).
23: CU240 does not support monitoring functions requiring an encoder.
25: Drive-integrated motion monitoring functions not supported (p9501, p9601.2).

Remedy:
De-select the monitoring function involved (p9501, p9601, p9801).

Note:
SCA: Safe Cam
SDI: Safe Direction (safe motion direction)
SLP: Safety-Limited Position
SLS: Safety-Limited Speed
See also: p9501 (SI Motion enable safety functions (processor 1)), r9771 (SI common functions (processor 1))

F01683 SI Motion P1: SLS enable missing
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The safety-relevant function "SLS" is not enabled in p9501 although other safety-relevant monitoring functions are enabled.
Note: This fault does not result in a safety stop response.
Remedy: Enable the function "SLS" (p9501.0) and carry out a POWER ON.
Note: Save the changes before POWER ON (copy from RAM to ROM).
SLS: Safety-Limited Speed
See also: p9501 (SI Motion enable safety functions (processor 1))

F01690 SI Motion: Data save problem for the NVRAM
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: POWER ON
Cause: There is not sufficient memory space in the NVRAM on the drive to save parameters r9781 and r9782 (safety logbook).
Note: This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
0: There is no physical NVRAM available in the drive.
1: There is no longer any free memory space in the NVRAM.
Remedy: For fault value = 0:
- use a Control Unit NVRAM.
For fault value = 1:
- de-select functions that are not required and that take up memory space in the NVRAM.
- contact the Hotline.
Note: NVRAM: Non-Volatile Random Access Memory (non-volatile read and write memory)

F01692 SI Motion P1: Parameter value not permitted for encoderless
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For encoderless motion monitoring functions, the parameter cannot be parameterized with this value.
Note: This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
Parameter number with the incorrect value.
See also: p9501 (SI Motion enable safety functions (processor 1))
Remedy: - Correct the parameter specified in the fault value.
See also: p9501 (SI Motion enable safety functions (processor 1))
### Faults and alarms

#### List of faults and alarms

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<td><strong>SI Motion P1: Safety parameter setting changed, POWER ON required</strong></td>
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<tr>
<td>Reaction:</td>
<td>NONE</td>
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<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>Safety parameters have been changed; these will only take effect following a POWER ON.</td>
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<tr>
<td>Notice:</td>
<td>All changed parameters of the safety motion monitoring functions will only take effect following a POWER ON.</td>
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<tr>
<td>Alarm value (r2124, interpret decimal):</td>
<td>Parameter number of the safety parameter which has changed, necessitating a POWER ON.</td>
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</table>
| Remedy:    | - execute the function "Copy RAM to ROM".  
- carry out a POWER ON (power off/on). |
A01699 (F) SI P1: Shutdown path must be tested

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The time set in p9659 for the forced checking procedure of the safety shutdown paths has been exceeded. The safety shutdown paths must be re-tested. After the next time the "STO" function is de-selected, the message is withdrawn and the monitoring time is reset.

Note:
- This message does not result in a safety stop response.
- The test must be performed within a defined, maximum time interval (p9659, maximum of 9000 hours) in order to comply with the requirements as laid down in the standards for timely fault detection and the conditions to calculate the failure rates of safety functions (PFH value). Operation beyond this maximum time period is permissible if it can be ensured that the forced checking procedure is performed before persons enter the hazardous area and who are depending on the safety functions correctly functioning.

See also: p9659 (SI forced checking procedure timer)

**Remedy:** Select STO and then de-select again.

**Note:**
- STO: Safe Torque Off

C01700 SI Motion P1: STOP A initiated

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** The drive is stopped via a STOP A (pulses are suppressed via the safety shutdown path of processor 1). Possible causes:
- stop request from processor 2.
- Pulses not suppressed after test stop selection.
- Subsequent response to the message C01706 "SI Motion P1: SAM/SBR limit exceeded".
- Subsequent response to the message C01714 "SI Motion P1: Safely-Limited Speed exceeded".
- Subsequent response to the message C01701 "SI Motion P1: STOP B initiated".

**Remedy:**
- remove the cause of the fault on the monitoring channel of processor 2.
- carry out a diagnostics routine for message C01706.
- carry out a diagnostics routine for message C01714.
- check the shutdown path of processor 1.
- replace Power Module.
- replace Control Unit.

This message can be acknowledged without a POWER ON as follows:
- via F-DI or PROFIsafe.

**Note:**
- F-DI: Failsafe Digital Input
- SAM: Safe Acceleration Monitor (safe acceleration monitoring)
- SBR: Safe Brake Ramp (safe brake ramp monitoring)

C01701 SI Motion P1: STOP B initiated

**Reaction:** NONE (OFF3)

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** The drive is stopped via a STOP B (braking along the OFF3 deceleration ramp). As a result of this fault, after the speed threshold parameterized in p9560 is fallen below, message C01700 "STOP A initiated" is output. Possible causes:
- stop request from processor 2.
- Subsequent response to the message C01714 "SI Motion P1: Safely-Limited Speed exceeded".
- Subsequent response to the message C01711 "SI Motion P1: Defect in a monitoring channel".
- Subsequent response to the message C01707 "SI Motion P1: tolerance for safe operating stop exceeded".

**Remedy:**
- remove the cause of the fault on the monitoring channel of processor 2.
- carry out a diagnostics routine for message C01714.
- carry out a diagnostics routine for message C01711.
- carry out a diagnostics routine for message C01707.

This message can be acknowledged without a POWER ON as follows:
- motion monitoring functions integrated in the drive: F-DI or PROFIsafe.
Faults and alarms

List of faults and alarms

Note:
F-DI: Failsafe Digital Input

C01706  SI Motion P1: SAM/SBR limit exceeded

Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Motion monitoring functions with set acceleration monitoring (p9506 = 3):
SAM - Safe acceleration monitoring. After initiating STOP B (SS1) the velocity has exceeded the selected tolerance.
Motion monitoring functions with set brake ramp monitoring (p9506 = 1):
SBR - Safe brake ramp monitoring. After initiating STOP B (SS1) or SLS changeover to the lower speed stage, the speed has exceeded the selected tolerance.
The drive is shut down by the message C01700 "SI Motion: STOP A initiated".
Remedy: Check the braking behavior and, if necessary, adapt the tolerance for the parameter settings of the "SAM" or the "SBR" function.
This message can be acknowledged without a POWER ON as follows:
- motion monitoring functions integrated in the drive: via F-DI or PROFIsafe.
Note:
F-DI: Failsafe Digital Input
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe brake ramp monitoring)
See also: p9548 (SI Motion SAM actual velocity tolerance (processor 1)), p9581 (SI Motion brake ramp reference value (processor 1)), p9582 (SI Motion brake ramp delay time (processor 1)), p9583 (SI Motion brake ramp monitoring time (processor 1))

C01711  SI Motion P1: Defect in a monitoring channel

Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: When cross-comparing the two monitoring channels, the drive detected a difference between the input data or results of the monitoring functions and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.
If at least one monitoring function is active, then message C01701 "SI Motion: STOP B initiated" is output.
The message value that resulted in a STOP F is displayed in r9725. The message values described involve the crosswise data comparison between processor 1 and processor 2.
The following message values may also occur in the following cases if the cause that is explicitly mentioned does not apply:
- synchronization error between processor 1 and processor 2.
Message value (r2124, interpret decimal):
0 to 999: Number of the cross-compared data that resulted in this fault.
0: Stop request from the other monitoring channel.
1: Status image of monitoring functions SLS or SAM/SBR (result list 1) (r9710[0], r9710[1]).
2: Status image of monitoring function n < nx (result list 2) (r9711[0], r9711[1]).
3: The position actual value differential (r9713) between the two monitoring channels is greater than the tolerance in p9542/p9342.
4: Error when synchronizing the crosswise data comparison between the two channels.
5: Function enable signals (p9501/p9301)
6: Limit value for SLS1 (p9531[0]/p9331[0])
7: Limit value for SLS2 (p9531[1]/p9331[1])
8: Limit value for SLS3 (p9531[2]/p9331[2])
9: Limit value for SLS4 (p9531[3]/p9331[3])
31: Position tolerance (p9542/p9342).
42: Shutdown speed, pulse canc. (p9560/p9360)
43: Memory test, stop response (STOP A).
44 ... 57: General
Possible cause 1 (during commissioning or parameter modification)
The tolerance value for the monitoring function is not the same on the two monitoring channels.
Possible cause 2 (during active operation)
The limit values are based on the actual value (r9713). If the safe actual values on the two monitoring channels do not match, the limit values, which have been set at a defined interval, will also be different (i.e. corresponding to fault value 3). This can be ascertained by checking the safe actual positions.
List of faults and alarms

44: Position actual value (r9713) + limit value for SLS1 (p9531[0]/p9331[0])
45: Position actual value (r9713) - limit value for SLS1 (p9531[0]/p9331[0])
46: Position actual value (r9713) + limit value for SLS2 (p9531[1]/p9331[1])
47: Position actual value (r9713) - limit value for SLS2 (p9531[1]/p9331[1])
48: Position actual value (r9713) + limit value for SLS3 (p9531[2]/p9331[2])
49: Position actual value (r9713) - limit value for SLS3 (p9531[2]/p9331[2])
50: Position actual value (r9713) + limit value for SLS4 (p9531[3]/p9331[3])
51: Position actual value (r9713) - limit value for SLS4 (p9531[3]/p9331[3])
54: Position actual value (r9713) + limit value nx (p9546/p9346) + tolerance (p9542/p9342)
55: Position actual value (r9713) + limit value nx (p9546/p9346)
56: Position actual value (r9713) - limit value nx (p9546/p9346)
57: Position actual value (r9713) - limit value nx (p9546/p9346) - tolerance (p9542/p9342)
58: Actual stop request.
75: Velocity limit nx (p9546, p9346).
76: Stop response for SLS1 (p9563[0]/p9363[0])
77: Stop response for SLS2 (p9563[1]/p9363[1])
78: Stop response for SLS3 (p9563[2]/p9363[2])
79: Stop response for SLS4 (p9563[3]/p9363[3])
81: Velocity tolerance for SAM (p9548/p9348)
83: Acceptance test timer (p9558/p9358)
230: Filter time constant for n < nx.
231: Hysteresis tolerance for n < nx.
232: Smoothed velocity actual value.
233: Smoothed velocity actual value + limit value nx / safety monitoring clock cycle + hysteresis tolerance.
234: Smoothed velocity actual value + limit value nx / safety monitoring clock cycle.
235: Smoothed velocity actual value - limit value nx / safety monitoring clock cycle.
236: Smoothed velocity actual value - limit value nx / safety monitoring clock cycle - hysteresis tolerance.
237: SGA n < nx.
238: Speed limit value for SAM (p9568/p9368).
239: Acceleration for SBR (p9581/p9381 and p9583/p9383).
240: Inverse value of acceleration for SBR (p9581/p9381 and p9583/p9383).
241: Deceleration time for SBR (p9582/p9382).
244: Encoderless actual value sensing filter time (p9587/p9387).
245: Encoderless actual value sensing minimum current (p9588/p9388).
246: Voltage tolerance acceleration (p9589/p9389).
247: SDI tolerance (p9564/p9364).
248: SDI positive upper limit (0x7fffffff).
249: Position actual value (r9713) - SDI tolerance.
250: Position actual value (r9713) + SDI tolerance.
251: SDI negative lower limit (0x80000001).
252: SDI stop response (p9566/p9366).
253: SDI delay time (p9565/p9365).
254: Setting, behavior during pulse suppression (p9509/p9309).
1000: Watchdog timer has expired. Too many signal changes have occurred at the F-DI.
1001: Initialization error of watchdog timer.
1005: Pulses already suppressed for test stop selection.
1011: Acceptance test status between the monitoring channels differ.
1020: Cyc. communication failure between the monit. cycles.
1041: Current absolute value too low (encoderless)
1042: Current/voltage plausibility error
1043: Too many acceleration phases
1044: Actual current values plausibility error.
6000 ... 6166: PROFIsafe message values (PROFIsafe driver for PROFIBUS DP V1/V2 and PROFINET). For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
6064: An internal software error has occurred (only for internal Siemens troubleshooting).
6064: ... 6071: Error when evaluating the F parameters. The values of the transferred F parameters do not match the expected values in the PROFIsafe driver.
6064: Destination address and PROFIsafe address are different (F_Dest_Add).
6065: Destination address not valid (F_Dest_Add).
6066: Source address not valid (F_Source_Add).
6067: Watchdog time not valid (F_WD_Time).
6068: Incorrect SIL level (F_SIL).
6069: Incorrect F-CRC length (F_CRC_Length).
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6070: Incorrect F parameter version (F_Par_Version).
6071: CRC error for the F parameters (CRC1). The transferred CRC value of the F parameters does not match the value calculated in the PROFIsafe driver.
6072: F parameterization is inconsistent.
6165: A communications error was identified when receiving the PROFIsafe telegram. The fault may also occur if an inconsistent or out-of-date PROFIsafe telegram has been received after switching the Control Unit off and on or after plugging in the PROFIBUS/PROFINET cable.
6166: A time monitoring error (timeout) was identified when receiving the PROFIsafe telegram.
Message values that have not been listed are only for internal Siemens troubleshooting.
See also: r9725 (SI Motion, diagnostics STOP F)

Remedy:
- Re message value = 0:
  - no error was identified in this monitoring channel. Note the error message of the other monitoring channel (for processor 2: C30711).
- Re message value = 3:
  - Commissioning phase:
  - check the setting of the gear parameters on both monitoring channels (p9521/p9321, p9522/p9322).
  - check the numerator of the gear ratio to ensure that it takes into account the motor pole pair number (p9522/p9322).
  - In operation:
  - increase the ramp-function generator ramp-up/down time (p1120/p1121), reduce the dynamic performance of the drive.
- Re message value = 1 ... 999:
  - if the message value is listed under cause: Check the crosswise-compared parameters to which the message value refers.
  - copy the safety parameters.
  - carry out a POWER ON (power off/on).
  - upgrade the Control Unit software.
- Re message value = 1000:
  - investigate the signal associated with the F-DI (contact problems).
- Re message value = 1001:
  - carry out a POWER ON (power off/on).
  - upgrade the Control Unit software.
- Re message value = 1005:
  - check the conditions for pulse enable.
- Re message value = 1011:
  - for diagnostics, refer to parameter (r9571).
- Re message value = 1020:
  - carry out a POWER ON (power off/on).
  - replace Control Unit.
- Re message value = 1041:
  - reduce the minimum current (p9588).
  - increase the voltage tolerance (p9589).
  - increase the ramp-function generator ramp-up/down time (p1120/p1121).
  - check that the current/speed control is set correctly (torque-generating/field-generating current and actual speed value may not fluctuate).
  - reduce the dynamic response of the setpoint value.
- Re message value = 1042:
  - increase the ramp-function generator ramp-up/down time (p1120/p1121).
  - check that the current/speed control is set correctly (torque-generating/field-generating current and actual speed value may not fluctuate).
  - reduce the dynamic response of the setpoint value.
- Re message value = 1043:
  - increase the ramp-function generator ramp-up/down time (p1120/p1121).
  - check that the current/speed control is set correctly (torque-generating/field-generating current and actual speed value may not fluctuate).
  - reduce the dynamic response of the setpoint value.
- Re message value = 6000:
  - carry out a POWER ON (power off/on).
  - upgrade firmware to later version.
  - contact the Hotline.
- Re message value = 6010:
  - check the setting of the value in the F parameter F_Dest_Add at the PROFIsafe slave.
- Re message value = 6011:
  - check the setting of the PROFIsafe address on processor 1 (p9610) and on processor 2 (p9810).
- Re message value = 6064:
  - check the setting of the value in the F parameter F_Dest_Add at the PROFIsafe slave.
  - check the setting of the PROFIsafe address on processor 1 (p9610) and on processor 2 (p9810).
- Re message value = 6065:
  - check the setting of the value in the F parameter F_Dest_Add at the PROFIsafe slave. It is not permissible for the destination address to be either 0 or FFFF!
Re message value = 6066:
- check the setting of the value in the F parameter F_Source_Add at the PROFIsafe slave. It is not permissible for
  the source address to be either 0 or FFFF!
Re message value = 6067:
- check the setting of the value in the F parameter F_WD_Time at the PROFIsafe slave. It is not permissible for the
  watch time to be 0!
Re message value = 6068:
- check the setting of the value in the F parameter F_SIL at the PROFIsafe slave. The SIL level must correspond to
  SIL2!
Re message value = 6069:
- check the setting of the value in the F parameter F_CRC_Length at the PROFIsafe slave. The setting of the CRC2
  length is 2-byte CRC in the V1 mode and 3-byte CRC in the V2 mode!
Re message value = 6070:
- check the setting of the value in the F parameter F_Par_Version at the PROFIsafe slave. The value for the F
  parameter version is 0 in the V1 mode and 1 in the V2 mode!
Re message value = 6071:
- check the settings of the values of the F parameters and the F parameter CRC (CRC1) calculated from these at
  the PROFIsafe slave and, if required, update.
Re message value = 6072:
- check the settings of the values for the F parameters and, if required, correct.
The following combinations are permissible for F parameters F_CRC_Length and F_Par_Version:
  F_CRC_Length = 2-byte CRC and F_Par_Version = 0
  F_CRC_Length = 3-byte CRC and F_Par_Version = 1
Re message value = 6165:
- if the fault occurs after powering up or after inserting the PROFIBUS/PROFINET cable, acknowledge the fault.
- check the configuration and communication at the PROFIsafe slave.
- check the setting of the value for F parameter F_WD_Time on the PROFIsafe slave and increase if necessary.
Re message value = 6166:
- check the configuration and communication at the PROFIsafe slave.
- check the setting of the value for F parameter F_WD_Time on the PROFIsafe slave and increase if necessary.
- evaluate diagnostic information in the F host.
- check PROFIsafe connection.
This message can be acknowledged as follows:
- motion monitoring functions integrated in the drive: via F-DI or PROFIsafe

### C01712

**SI Motion P1: Defect in F-Io processing**

**Reaction:** NONE

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** When cross checking and comparing the two monitoring channels, the drive detected a difference between
parameters or results of the F-Io processing and initiated a STOP F. One of the monitoring functions no longer
reliably functions - i.e. safe operation is no longer possible.

If at least one monitoring function is active, then safety message C01701 "SI Motion: STOP B initiated" is output.
Message value (r2124, interpret decimal):
Number of the cross-compared data that resulted in this message.
1: SI discrepancy monitoring time inputs (p10002, p10102).
2: SI acknowledgement internal event input terminal (p10006, p10106).
3: SI STO input terminal (p10022, p10122).
4: SI SS1 input terminal (p10023, p10123).
7: SI SLS input terminal (p10026, p10126).
13: Different states for static inactive signal sources (p10006, p10022, ..., p10026).
14: SI discrepancy monitoring time outputs (p10002, p10102).
15: SI acknowledgement internal event (p10006, p10106).
46: SI digital inputs debounce time (p10017, p10117)
47: Selection F-DI for PROFIsafe (p10050, p10150)
48: Selection F-DI for PROFIsafe (p10050, p10150)
49: SI SDI positive input terminal (p10030, p10130).
50: SI SDI negative input terminal (p10031, p10131).

**Remedy:**
- check parameterization in the parameters involved and correct if required.
- ensure equality by copying the SI data to processor 2 and then carry out an acceptance test.

**Note:**
This message can be acknowledged via F-DI or PROFIsafe.
Faults and alarms

List of faults and alarms

Note:
F-DI: Failsafe Digital Input
SLS: Safely-Limited Speed
SS1: Safe Stop 1
STO: Safe Torque Off

C01714  SI Motion P1: Safely-Limited Speed exceeded
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive has moved faster than that specified by the velocity limit value (p9531). The drive is stopped as a result of the configured stop response (p9563).
Message value (r2124, interpret decimal):
100: SLS1 exceeded.
200: SLS2 exceeded.
300: SLS3 exceeded.
400: SLS4 exceeded.
Remedy:
- check the traversing/motion program in the control.
- check the limits for "Safely-Limited Speed (SLS)" and if required, adapt (p9531).
This message can be acknowledged as follows:
- via F-DI or PROFIsafe.
Note:
SLS: Safely-Limited Speed
See also: p9531 (SI Motion SLS limit values (processor 1)), p9563 (SI Motion SLS-specific stop response (processor 1))

C01716 SI Motion P1: Tolerance for safe motion direction exceeded
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The tolerance for the "safe motion direction" function was exceeded. The drive is stopped as a result of the configured stop response (p9566).
Message value (r9749, interpret decimal):
0: Tolerance for the "safe motion direction positive" function exceeded.
1: Tolerance for the "safe motion direction negative" function exceeded.
Remedy:
- check the traversing/motion program in the control.
- check the tolerance for "SDI" function and if required, adapt (p9564).
This message can be acknowledged as follows:
- Deselect the "SDI" function and select again.
- Perform a safe acknowledgment via F-DI or PROFIsafe.
Note:
SDI: Safe Direction (safe motion direction)
SI: Safety Integrated
See also: p9564 (SI Motion SDI tolerance (processor 1)), p9565 (SI Motion SDI delay time (processor 1)), p9566 (SI Motion SDI stop response (processor 1))

C01770 SI Motion P1: Discrepancy error of the failsafe inputs
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The fail-safe digital inputs (F-DI) show a different state longer than that parameterized in p10002 / p10102.
Fault value (r0949, interpret binary):
Bit 0: Discrepancy error for F-DI 0
Bit 1: Discrepancy error for F-DI 1
...
Note:
If several discrepancy errors occur consecutively, then this fault is only signaled for the first error that occurs.
Remedy:
- check the wiring of the F-DI (contact problems).
Note:
This message can be acknowledged via F-DI or PROFIsafe.
Discrepancy errors of an F-DI can only be completely acknowledged if safe acknowledgement was carried out once the cause of the error was resolved (p10006 or acknowledgment via PROFIsafe). As long as safety acknowledgement was not carried out, the corresponding F-DI stays in the safe state internally.
For cyclic switching operations at the F-DI, it may be necessary to adapt the discrepancy time to the switching frequency.

If the period of a cyclic switching pulse has the order of magnitude of double the value of p10002, then the following formulas must be checked.

\[ p_{10002} < \left( \frac{t_p}{2} \right) - td \]  
\[ p_{10002} \geq p_{9500} \]  
\[ p_{10002} > td \]

where:
- \( t_p \) = period for a switching operation in ms.
- \( td \) = possible actual discrepancy time (in ms) that can occur with a switching operation. This must correspond to at least 1 SI sampling cycle (see p9500).
- \( td \) = possible actual discrepancy time (in ms) that can occur with a switching operation. This must correspond to at least 1 SI sampling cycle (see p9500).

When debounce p10017 is active, the discrepancy time is directly specified by the debounce time.

If the period of a cyclic switching pulse has the order of magnitude of twice the debounce time, then the following formulas should be checked.

\[ p_{10002} < p_{10017} + 1 \text{ ms} - td \]  
\[ p_{10002} > td \]  
\[ p_{10002} \geq p_{9500} \]

**Example:**
For a 12 ms SI sampling cycle and a switching frequency of 110 ms (p10017 = 0), the maximum discrepancy time which can be set is as follows:

\[ p_{10002} \leq \left( \frac{110}{2} \text{ ms} \right) - 12 \text{ ms} = 43 \text{ ms} \]

Rounded-off, \( p_{10002} \leq 36 \text{ ms} \) is obtained (since the discrepancy time can only be accepted as a whole SI sampling cycle, the value will need to be rounded up or down to a whole SI sampling time value if the result is not an exact multiple of an SI sampling cycle).

**Note:**
- F-DI: Failsafe Digital Input

---

### A01796 (F, N)
**SI CU: Wait for communication**

**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The drive waits for communication to be established to execute the safety-relevant motion monitoring functions.  
**Note:** In this state, the pulses are safely suppressed.  
**Remedy:** If, after a longer period of time, the message is not automatically withdrawn, the following checks have to be made:  
- Check any other PROFIsafe communication messages/signals present and evaluate them.  
- check the operating state of the F-Host.  
- Check the communication connection to the F Host.  

See also: p9601, p9801

### C01798
**SI Motion P1: Test stop running**

**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The test stop is active.  
**Remedy:** Not necessary. The message is withdrawn when the test stop is finished.

### C01799
**SI Motion P1: Acceptance test mode active**

**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The acceptance test mode is active.  
**Remedy:** Not necessary. The message is withdrawn when exiting the acceptance test mode.
Faults and alarms

List of faults and alarms

A01900 (F)  PROFIBUS: Configuration telegram error
Reaction: NONE
Acknowledge: NONE
Cause: A PROFIBUS master attempts to establish a connection using an incorrect configuring telegram.
Alarm value (r2124, interpret decimal):
2: Too many PZD data words for input or output. The number of possible PZD is specified by the number of indices in r2050/p2051.
3: Uneven number of bytes for input or output.
501: PROFIsafe parameter error (e.g. F_dest).
502: PROFIsafe telegram does not match.
Remedy: Check the bus configuration on the master and slave sides.
Re alarm value = 2:
Check the number of data words for input and output.
Re alarm value = 501:
Check the set PROFIsafe address (p9610).
Re alarm value = 502:
Check the enable of F-DI (p9501.30).

F01910 (N, A)  Fieldbus interface setpoint timeout
Reaction: OFF3 (IASC/DCBRAKE, NONE, OFF1, OFF2, STOP2)
Acknowledgment: IMMEDIATELY
Cause: The reception of setpoints from the fieldbus interface has been interrupted.
- bus connection interrupted.
- communication partner switched off.
For PROFIBUS:
- PROFIBUS master set into the STOP state.
See also: p2047 (PROFIBUS additional monitoring time)
Remedy: Ensure bus connection has been established and switch on communication peer.
- if required, adapt p2040.
For PROFIBUS:
- set the PROFIBUS master to the RUN state.
- slave redundancy: For operation on a Y link, it must be ensured that "DP alarm mode = DPV1" is set in the slave parameterization.
See also: p2047 (PROFIBUS additional monitoring time)

A01920 (F)  PROFIBUS: Interruption cyclic connection
Reaction: NONE
Acknowledgment: NONE
Cause: The cyclic connection to the PROFIBUS master is interrupted.
Remedy: Establish the PROFIBUS connection and activate the PROFIBUS master in the cyclic mode.

A01945  PROFIBUS: Connection to the Publisher failed
Reaction: NONE
Acknowledgment: NONE
Cause: For PROFIBUS peer-to-peer data transfer, the connection to at least one Publisher has failed.
Alarm value (r2124, interpret binary):
Bit 0 = 1: Publisher with address in r2077[0], connection failed.
...
Bit 15 = 1: Publisher with address in r2077[15], connection failed.
Remedy: Check the PROFIBUS cables.
See also: r2077 (PROFIBUS diagnostics peer-to-peer data transfer addresses)

F01946 (A)  PROFIBUS: Connection to the Publisher aborted
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledgment: IMMEDIATELY (POWER ON)
Cause: The connection to at least one Publisher for PROFIBUS peer-to-peer data transfer in cyclic operation has been aborted.
Fault value (r0949, interpret binary):

- Bit 0 = 1: Publisher with address in r2077[0], connection aborted.
- Bit 15 = 1: Publisher with address in r2077[15], connection aborted.

Remedy:
- check the PROFIBUS cables.
- check the state of the Publisher that has the aborted connection.

See also: r2077 (PROFIBUS diagnostics peer-to-peer data transfer addresses)

F01951 CU SYNC: Synchronization application clock cycle missing

Reaction: OFF2 (NONE)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: Internal synchronization of the application cycles unsuccessful.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
- carry out a POWER ON (power off/on) for all components.
- upgrade the Control Unit software.

A01953 CU SYNC: Synchronization not completed

Reaction: NONE

Acknowledge: NONE

Cause: After the drive system was powered up, synchronization between the basic 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).

A02050 Trace: Start not possible

Reaction: NONE

Acknowledge: NONE

Cause: The trace has already been started.

Remedy: Stop the trace and, if necessary, start again.

A02055 Trace: Recording time too short

Reaction: NONE

Acknowledge: NONE

Cause: The trace duration is too short.
The minimum is twice the value of the trace clock cycle.

Remedy: Check the selected recording time and, if necessary, adjust.

A02056 Trace: Recording cycle too short

Reaction: NONE

Acknowledge: NONE

Cause: The selected recording clock cycle is lower than the basic clock cycle 500µs.

Remedy: Increase the value for the trace cycle.

A02057 Trace: Time slice clock cycle invalid

Reaction: NONE

Acknowledge: NONE

Cause: The time slice clock cycle selected does not match any of the existing time slices.

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

Reaction: NONE

Acknowledge: NONE

Cause: The selected time slice clock cycle cannot be used for the endless trace
### Faults and alarms

#### List of faults and alarms

**Remedy:** Enter the clock cycle of an existing time slice with a cycle time \( \geq 2 \text{ ms} \) for up to 4 recording channels or \( \geq 4 \text{ ms} \) from 5 recording channels per trace.

The existing time slices can be read out via p7901.

See also: r7901 (Sampling times)

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A02059</td>
<td>Trace: Time slice clock cycle for 2 x 8 recording channels not valid</td>
<td>NONE</td>
<td>NONE</td>
<td>The selected time slice clock cycle cannot be used for more than 4 recording channels.</td>
<td>Enter the clock cycle of an existing time slice with a cycle time ( \geq 4 \text{ 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)</td>
</tr>
<tr>
<td>A02060</td>
<td>Trace: Signal to be traced missing</td>
<td>NONE</td>
<td>NONE</td>
<td>- a signal to be traced was not specified.</td>
<td>- specify the signal to be traced.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- the specified signals are not valid.</td>
<td>- check whether the relevant signal can be traced.</td>
</tr>
<tr>
<td>A02061</td>
<td>Trace: Invalid signal</td>
<td>NONE</td>
<td>NONE</td>
<td>- the specified signal does not exist.</td>
<td>- specify the signal to be traced.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- the specified signal can no longer be traced (recorded).</td>
<td>- check whether the relevant signal can be traced.</td>
</tr>
<tr>
<td>A02062</td>
<td>Trace: Invalid trigger signal</td>
<td>NONE</td>
<td>NONE</td>
<td>- a trigger signal was not specified.</td>
<td>Specify a valid trigger signal.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- the specified signal does not exist.</td>
<td></td>
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<td></td>
<td>- the specified signal is not a fixed-point signal.</td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td>- the specified signal cannot be used as a trigger signal for the trace.</td>
<td></td>
</tr>
<tr>
<td>A02063</td>
<td>Trace: Invalid data type</td>
<td>NONE</td>
<td>NONE</td>
<td>The specified data type to select a signal using a physical address is invalid.</td>
<td>Use a valid data type.</td>
</tr>
<tr>
<td>A02070</td>
<td>Trace: Parameter cannot be changed</td>
<td>NONE</td>
<td>NONE</td>
<td>The trace parameter settings cannot be changed when the trace is active.</td>
<td>- stop the trace before parameterization.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- if required, start the trace.</td>
<td></td>
</tr>
<tr>
<td>A02075</td>
<td>Trace: Pretrigger time too long</td>
<td>NONE</td>
<td>NONE</td>
<td>The selected pretrigger time must be shorter than the trace time.</td>
<td>Check the pretrigger time setting and change if necessary.</td>
</tr>
</tbody>
</table>
F02080 Trace: Parameterization deleted due to unit changeover
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The trace parameterization in the drive unit was deleted due to a unit changeover or a change in the reference parameters.
Remedy: Restart trace.

A02099 Trace: Insufficient Control Unit memory
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.

A02150 OA: Application cannot be loaded
Reaction: NONE
Acknowledge: NONE
Cause: The system was not able to load an OA application.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.
Note:
OA: Open Architecture

F02151 (A) OA: Internal software error
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An internal software error has occurred within an OA application.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.
- replace the Control Unit.
Note:
OA: Open Architecture

F02152 (A) OA: Insufficient memory
Reaction: OFF1
Acknowledge: IMMEDIATELY (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.
Note:
OA: Open Architecture
Faults and alarms

List of faults and alarms

F03000  NVRAM fault on action
Reaction:  NONE
Acknowledgement:  IMMEDIATELY
Cause:  A fault occurred during execution of action p7770 = 1, 2 for the NVRAM data.
Fault value (r0949, interpret hexadecimal):
yyx: 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.
Remedy:  Perform the remedy according to the results of the troubleshooting.
If necessary, start the action again.

F03001  NVRAM checksum incorrect
Reaction:  NONE
Acknowledgement:  IMMEDIATELY
Cause:  A checksum error occurred when evaluating the non-volatile data (NVRAM) on the Control Unit.
The NVRAM data affected was deleted.
Remedy:  Carry out a POWER ON (power off/on) for all components.

F03505 (N, A)  CU: Analog input wire breakage
Reaction:  OFF1 (NONE, OFF2)
Acknowledgement:  IMMEDIATELY (POWER ON)
Cause:  The wire-break monitoring for an analog input has responded.
The input current of the analog input has undershot the threshold value parameterized in p0761[0...3].
p076[0]: analog input 0 (only CU240D-2)
p076[1]: analog input 1 (only CU240D-2)
Fault value (r0949, interpret decimal):
yxxx: 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:
p076[0...1] = 1 (2 ... 10 V with monitoring)
Remedy:  Check the connection to the signal source for interruptions.
Check the magnitude of the injected current - it is possible that the infed signal is too low.
The input current measured by the analog input can be read in r0752[x].

A03510 (F, N)  CU: Calibration data not plausible
Reaction:  NONE
Acknowledgement:  NONE
Cause:  During booting, the calibration data for the analog inputs is read and checked with respect to plausibility.
At least one calibration data point was determined to be invalid.
Remedy:  - power down/power up the power supply for the Control Unit.
If it reoccurs, replace the module.
In principle, operation could continue.
The analog channel involved possibly does not achieve the specified accuracy.

A05000 (N)  Power unit: Overtemperature heat sink AC inverter
Reaction:  NONE
Acknowledgement:  NONE
List of faults and alarms

Faults and alarms

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Cause: The alarm threshold for overtemperature at the inverter heat sink has been reached. The response is set using p0290.

Remedy: If the temperature of the heat sink increases by an additional 5 K, then fault F30004 is initiated.

Check the following:
- is the ambient temperature within the defined limit values?
- has the load conditions and the load duty cycle been appropriately dimensioned?
- has the cooling failed?

A05001 (N) Power unit: Overtemperature depletion layer chip

Reaction: NONE

Acknowledge: NONE

Cause: Alarm threshold for overtemperature of the power semiconductor in the AC converter has been reached. The response is set using p0290.

Note:
- If the depletion layer temperature increases by an additional 15 K, then fault F30025 is triggered.

Remedy: Check the following:
- is the ambient temperature within the defined limit values?
- has the load conditions and the load duty cycle been appropriately dimensioned?
- has the cooling failed?
- pulse frequency too high?

See also: r0037 (Power unit temperatures), p0290 (Power unit overload response)

A05002 (N) Power unit: Air intake overtemperature

Reaction: NONE

Acknowledge: NONE

Cause: For chassis power units, the following applies:

The alarm threshold for the air intake overtemperature has been reached. For air-cooled power units, the threshold is 42 °C (hysteresis 2 K). The response is set using p0290.

If the air intake temperature increases by an additional 13 K, then fault F30035 is output.

Remedy: Check the following:
- is the ambient temperature within the defined limit values?
- has the fan failed? Check the direction of rotation.

A05004 (N) Power unit: Rectifier overtemperature

Reaction: NONE

Acknowledge: NONE

Cause: The alarm threshold for the overtemperature of the rectifier has been reached. The response is set using p0290.

If the temperature of the rectifier increases by an additional 5 K, then fault F30037 is triggered.

Remedy: Check the following:
- is the ambient temperature within the defined limit values?
- has the load conditions and the load duty cycle been appropriately dimensioned?
- has the fan failed? Check the direction of rotation.
- has a phase of the line supply failed?
- is an arm of the supply (incoming) rectifier defective?

A05006 (N) Power unit: Overtemperature thermal model

Reaction: NONE

Acknowledge: NONE

Cause: The temperature difference between the chip and heat sink has exceeded the permissible limit value (blocksize power units only).

Depending on p0290, an appropriate overload response is initiated.

See also: r0037 (Power unit temperatures)

Remedy: Not necessary.

The alarm disappears automatically once the limit value is undershot.

Note:
- If the alarm does not disappear automatically and the temperature continues to rise, this can result in fault F30024.

See also: p0290 (Power unit overload response)
Faults and alarms

List of faults and alarms

F06310 (A) Supply voltage (p0210) incorrectly parameterized
Reaction: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The measured DC voltage lies outside the tolerance range after pre-charging has been completed.
The following applies for the tolerance range: 1.16 * p0210 < r0070 < 1.6 * p0210
Note: The fault can only be acknowledged when the drive is powered down.
See also: p0210 (Drive unit line supply voltage)
Remedy: - check the parameterized supply voltage and if required change (p0210).
- check the line supply voltage.
See also: p0210 (Drive unit line supply voltage)

A06921 (N) Braking resistor phase unsymmetry
Reaction: NONE
Acknowledge: NONE
Cause: The three resistors of the braking chopper are not symmetrical.
Remedy: - check the feeder cables to the braking resistors.
- If required, increase the value for detecting dissymmetry (p1364).

F06922 Braking resistor phase failure
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A phase failure for the brake resistor was detected.
Fault value (r0949, interpret decimal):
11: Phase U
12: Phase V
13: Phase W
See also: p3235 (Phase failure signal motor monitoring time)
Remedy: Check the feeder cables to the braking resistors.

F07011 Drive: Motor overtemperature
Reaction: OFF2 (NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: KTY:
The motor temperature has exceeded the fault threshold (p0605) or the timer (p0606) after the alarm threshold was exceeded (p0604) has expired. The response parameterized in p0610 becomes active. The alarm is withdrawn if the response threshold for wire breakage or sensor not connected is exceeded (R > 2120 Ohm).
PTC or bimetallic NC contact:
The response threshold of 1650 Ohm was exceeded or the NC contact opened and the timer (p0606) has expired. The response parameterized in p0610 becomes active.
Possible causes:
- Motor is overloaded
- motor ambient temperature too high.
- Wire break or sensor not connected
Fault value (r0949, interpret decimal):
200: The motor temperature model 1 (i2t) signals an overtemperature (p0612.0 = 1, p0611 > 0).
See also: p0604, p0605, p0606, p0612, p0625, p0626, p0627, p0628
Remedy: - Reduce the motor load.
- check the ambient temperature and the motor ventilation.
- check the wiring and the connection of the PTC or bimetallic NC contact.
See also: p0604, p0605, p0606, p0612, p0625, p0626, p0627, p0628

A07012 (N) Drive: Motor temperature model 1/3 overtemperature
Reaction: NONE
Acknowledge: NONE
Cause: The thermal i2t motor model for synchronous motors identified that the alarm threshold was exceeded.
See also: r0034 (Motor utilization), p0605 (Mot_temp_mod 1/2 threshold), p0611 (i2t motor model thermal time constant), p0612 (Mot_temp_mod activation)
Remedy:  
- check the motor load and if required, reduce.  
- check the motor ambient temperature.  
- check the overtemperature fault threshold (p0605), (= alarm threshold for the I2t motor model).  
See also: r0034 (Motor utilization), p0605 (Mot_temp_mod 1/2 threshold), p0611 (I2t motor model thermal time constant), p0612 (Mot_temp_mod activation)

A07015  
Drive: Motor temperature sensor alarm  
Reaction: NONE  
Acknowledge: NONE  
Cause:  
An error was detected when evaluating the temperature sensor set in p0601.  
With the fault, the time in p0607 is started. If the fault is still present after this time has expired, then fault F07016 is output; however, at the earliest, 50 ms after alarm A07015.  
Possible causes:  
- wire breakage or sensor not connected (KTY: R > 2120 Ohm).  
- measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm).  
Remedy:  
- make sure that the sensor is connected correctly.  
- check the parameterization (p0601).  
See also: r0035 (Motor temperature), p0601 (Motor temperature sensor type), p0607 (Temperature sensor fault timer)

F07016  
Drive: Motor temperature sensor fault  
Reaction: OFF1 (NONE, OFF2, OFF3, STOP2)  
Acknowledge: IMMEDIATELY  
Cause:  
An error was detected when evaluating the temperature sensor set in p0601.  
Possible causes:  
- wire breakage or sensor not connected (KTY: R > 2120 Ohm).  
- measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm).  
Note:  
If alarm A07015 is present, the time in p0607 is started. If the fault is still present after this time has expired, then fault F07016 is output; however, at the earliest, 50 ms after alarm A07015.  
See also: p0607 (Temperature sensor fault timer)  
Remedy:  
- make sure that the sensor is connected correctly.  
- check the parameterization (p0601).  
- induction motors: De-activate temperature sensor fault (p0607 = 0).  
See also: r0035 (Motor temperature), p0601 (Motor temperature sensor type), p0607 (Temperature sensor fault timer)

F07080  
Drive: Incorrect control parameter  
Reaction: NONE  
Acknowledge: IMMEDIATELY (POWER ON)  
Cause:  
The closed-loop control parameters have been parameterized incorrectly (e.g. p0356 = L_spread = 0).  
Fault value (r0949, interpret decimal):  
The fault value includes the parameter number involved.  
The following parameter numbers only occur as fault values for vector drives:  
p0310, for synchronous motors: p0341, p0344, p0350, p0357  
The following parameter numbers do not occur as fault values for synchronous motors:  
p0354, p0358, p0360  
See also: p0310, p0311, p0341, p0344, p0350, p0354, p0356, p0357, p0358, p0360, p0640, p1082, p1300  
Remedy:  
Modify the parameter indicated in the fault value (r0949) (e.g. p0640 = current limit > 0).  
See also: p0311, p0341, p0344, p0350, p0354, p0356, p0358, p0360, p0640, p1082

F07082  
Macro: Execution not possible  
Reaction: NONE  
Acknowledge: IMMEDIATELY  
Cause:  
The macro cannot be executed.  
Fault value (r0949, interpret hexadecimal):  
ccccbbbbaa hex:  
cccc = preliminary parameter number, bb = supplementary information, aa = fault cause
Fault causes for the trigger parameter itself:
19: Called file is not valid for the trigger parameter.
20: Called file is not valid for parameter 15.
21: Called file is not valid for parameter 700.
22: Called file is not valid for parameter 1000.
23: Called file is not valid for parameter 1500.
24: Data type of a TAG is incorrect (e.g. Index, number or bit is not U16).

Fault causes for the parameters to be set:
25: Error level has an undefined value.
26: Mode has an undefined value.
27: A value was entered as string in the tag value that is not "DEFAULT".
31: Entered drive object type unknown.
32: A device was not able to be found for the determined drive object number.
34: A trigger parameter was recursively called.
35: It is not permissible to write to the parameter via macro.
36: Check, writing to a parameter unsuccessful, parameter can only be read, not available, incorrect data type, value range or assignment incorrect.
37: Source parameter for a BICO interconnection was not able to be determined.
38: An index was set for a non-indexed (or CDS-dependent) parameter.
39: No index was set for an indexed parameter.
41: A bit operation is only permissible for parameters with the parameter format DISPLAY_BIN.
42: A value not equal to 0 or 1 was set for a BitOperation.
43: Reading the parameter to be changed by the BitOperation was unsuccessful.
51: Factory setting for DEVICE may only be executed on the DEVICE.
61: The setting of a value was unsuccessful.

Remedy:
- check the parameter involved.
- check the macro file and BICO interconnection.
See also: p0015, p1000, p1500

F07083 Macro: ACX file not found
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The ACX file (macro) to be executed was not able to be found in the appropriate directory.
Fault value (r0949, interpret decimal):
Parameter number with which the execution was started.
See also: p0015, p1000, p1500
Remedy:
- check whether the file is saved in the appropriate directory on the memory card.

F07084 Macro: Condition for WaitUntil not fulfilled
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
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A reference parameter was changed in the system. This resulted in the fact that for the parameters involved, the selected value was not able to be written in the per unit notation. 
The values of the parameters were set to the corresponding violated minimum limit/maximum limit or to the factory setting.
Possible causes:
- the steady-state minimum limit/maximum limit or that defined in the application was violated.
Fault value (r0949, parameter):
Diagnostics parameter to display the parameters that were not able to be re-calculated.
Remedy:
Check the adapted parameter value and if required correct.
### F07088  
**Units changeover: Parameter limit violation due to units changeover**

- **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 limit is violated the parameter value is rounded down.
  Fault value (r0949, interpret decimal):
  - Diagnostics parameter r9451 to display all parameters whose value had to be adapted.
  See also: p0100 (IEC/NEMA mot stds), p0505 (Selecting the system of units), p0595 (Technological unit selection)
- **Remedy:** Check the adapted parameter values and if required correct.
  See also: r9451 (Units changeover adapted parameters)

### A07089  
**Changing over units: Function module activation is blocked because the units have been changed over**

- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:**
  An attempt was made to activate a function module. This is not permissible if the units have already been changed over.
  See also: p0100 (IEC/NEMA mot stds), p0505 (Selecting the system of units)
- **Remedy:** Restore units that have been changed over to the factory setting.

### A07200  
**Drive: Master control ON command present**

- **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: Automatic restart interrupted**

- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY
- **Cause:**
  - The specified number of restart attempts (p1211) has been completely used up because within the monitoring time (p1213) the faults were not able to be acknowledged. The number of restart attempts (p1211) is decremented at each new start attempt.
  - There is no active ON command.
  - The monitoring time for the power unit has expired (p0857).
  - When exiting commissioning or at the end of the motor identification routine or the speed controller optimization, the drive unit is not automatically powered up again.
  Fault value (r0949, interpret hexadecimal):
  Only for internal Siemens troubleshooting.
Faults and alarms

List of faults and alarms

Remedy:  
- increase the number of restart attempts (p1211). The actual number of starting attempts is displayed in r1214.
- increase the delay time in p1212 and/or the monitoring time in p1213.
- issue an ON command (p0840).
- either increase or disable the monitoring time of the power unit (p0857).
- Reduce the delay time for resetting the start counter (p1213[1]) so that fewer faults are registered in the time interval.

A07321  
**Drive:** Automatic restart active  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The automatic restart (AR) is active. When the line supply returns and/or the causes of the existing faults are removed the drive is automatically restarted. The pulses are enabled and the motor starts to rotate. For p1210 = 26, the alarm after the line supply returns is also displayed if there is no fault and there is no ON command. Restarting is realized with the delayed setting of the ON command.

Remedy:  
- the automatic restart (AR) should, if required, be inhibited (p1210 = 0).
- an automatic restart can be directly interrupted by withdrawing the power-on command (BI: p0840).
- for p1210 = 26: by withdrawing the OFF2- / OFF3 control commands.

F07330  
**Flying restart:** Measured search current too low  
**Reaction:** OFF2 (NONE, OFF1)  
**Acknowledge:** IMMEDIATELY  
**Cause:** During a flying restart, it was identified that the search current reached is too low. It is possible that the motor is not connected.

Remedy: Check the motor feeder cables.

F07331  
**Flying restart:** Function not supported  
**Reaction:** OFF2 (NONE, OFF1)  
**Acknowledge:** IMMEDIATELY  
**Cause:** It is not possible to power up with the motor rotating (no flying restart). In the following cases, the "flying restart" function is not supported:
- Perm.-magnet synch. motors (PEM): operation with U/f char. and sensorless vector control.

Remedy: De-activate the "flying restart" function (p1200 = 0).

A07400 (N)  
**Drive:** DC link voltage maximum controller active  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The DC link voltage controller has been activated because the upper switch-in threshold has been exceeded (r1242, r1282). The ramp-down times are automatically increased in order to maintain the DC link voltage (r0070) within the permissible limits. There is a system deviation between the setpoint and actual speeds. When the DC link voltage controller is switched out (disabled), this is the reason that the ramp-function generator output is set to the speed actual value.

Remedy: If the controller is not to intervene:
- increase the ramp-down times.
- switch-off the Vdc_max controller (p1240 = 0 for vector control, p1280 = 0 for U/f control).
If the ramp-down times are not to be changed:
- use a chopper or regenerative feedback unit.

A07401 (N)  
**Drive:** DC link voltage maximum controller de-activated  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The Vdc_max controller can no longer maintain the DC link voltage (r0070) below the limit value (r1242, r1282) and was therefore switched out (disabled).
- the line supply voltage is permanently higher than specified for the power unit.
- the motor is permanently in the regenerative mode as a result of a load that is driving the motor.

Remedy:  
- check whether the input voltage is within the permissible range.
- check whether the load duty cycle and load limits are within the permissible limits.
A07402 (N) Drive: DC link voltage minimum controller active
Reaction: NONE
Acknowledge: NONE
Cause: The DC link voltage controller has been activated as the lower switch-in threshold has been undershot (r1246, r1286).
The kinetic energy of the motor is used to buffer the DC link. The drive is therefore braked.
See also: r0056 (Status word, closed-loop control), p1240 (Vdc controller configuration (vector control)), p1280 (Vdc controller configuration (U/f))
Remedy: The alarm disappears when power supply returns.

F07405 (N, A) Drive: Kinetic buffering minimum speed not reached
Reaction: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: During kinetic buffering the speed fell below minimum speed (p1257 or p1297 for vector drives with U/f control) and the line supply did not return.
Remedy: Check the speed threshold for the Vdc_min controller (kinetic buffering) (p1257, p1297).
See also: p1257 (Vdc_min controller speed threshold), p1297 (Vdc_min controller speed threshold (U/f))

F07406 (N, A) Drive: Kinetic buffering maximum time exceeded
Reaction: OFF3 (IASC/DCBRAKE, NONE, OFF1, OFF2, STOP2)
Acknowledge: IMMEDIATELY
Cause: The maximum buffer time (p1255 and p1295 for vector drives with U/f control) has been exceeded without the line supply having returned.
Remedy: Check the time threshold for Vdc-min controller (kinetic buffering) (p1255, p1295).
See also: p1255 (Vdc_min controller time threshold), p1295 (Vdc_min controller time threshold (U/f))

A07409 Drive: U/f control, current limiting controller active
Reaction: NONE
Acknowledge: NONE
 Cause: The current limiting controller of the U/f control was activated because the current limit was exceeded.
Remedy: The alarm automatically disappears after one of the following measures:
- increase current limit (p0640).
- reduce the load.
- slow down the ramp up to the setpoint speed.

F07410 Drive: Current controller output limited
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: The condition "I_act = 0 and Uq_set_1 longer than 16 ms at its limit" is present and can be caused by the following:
- motor not connected or motor contactor open.
- motor data and motor configuration (star-delta) do not match.
- no DC link voltage present.
- power unit defective.
- the "flying restart" function is not activated.
Remedy: - connect the motor or check the motor contactor.
- check the motor parameterization and the connection type (star-delta).
- check the DC link voltage (r0070).
- check the power unit.
- activate the "flying restart" function (p1200).

F07411 Drive: Flux controller output limited
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: When quick magnetizing is configured (p1401.6 = 1) the specified flux setpoint is not reached although 90% of the maximum current is specified.
- incorrect motor data.
- motor data and motor configuration (star-delta) do not match.
### Faults and alarms

#### List of faults and alarms

- the current limit has been set too low for the motor.
- induction motor (encoderless, open-loop controlled) in I2t limiting.
- power unit is too small.
- the magnetizing time is too short.

**Remedy:**
- correct the motor data. Perform motor data identification and rotating measurement.
- check the motor configuration.
- correct the current limits (p0640).
- reduce the induction motor load.
- if necessary, use a larger power unit.
- check motor supply cable.
- check power unit.
- increase p0346.

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**A07416 Drive: Flux controller configuration**

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The configuration of the flux control (p1401) is contradictory.

Alarm value (r2124, interpret hexadecimal):

- cccbbaaaa hex
  - aaaa = Parameter
  - bb = Index
  - cc = fault cause
- 1: Quick magnetizing (p1401.6) for soft starting (p1401.0).
- 3: Quick magnetizing (p1401.6) for Rs identification after restart (p0621 = 2).

**Remedy:**
- Re fault cause = 1:
  - Shut down soft start (p1401.0 = 0).
  - Shut down quick magnetizing (p1401.6 = 0).
- Re fault cause = 3:
  - Re-parameterize Rs identification (p0621 = 0, 1)
  - Shut down quick magnetizing (p1401.6 = 0).

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**F07426 (A) Technology controller actual value limited**

**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)

**Acknowledge:** IMMEDIATELY

**Cause:** The actual value for the technology controller, interconnected via connector input p2264, has reached a limit.

Fault value (r0949, interpret decimal):
- 1: upper limit reached.
- 2: lower limit reached.

**Remedy:**
- adapt the limits to the signal level (p2267, p2268).
- Check the actual value normalization (p0595, p0596).
- Deactivate evaluation of the limits (p2252 bit 3)

See also: p0595 (Technological unit selection), p0596 (Technological unit reference quantity), p2264 (Technology controller actual value), p2267 (Technology controller upper limit actual value), p2268 (Technology controller lower limit actual value)

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**A07428 (N) Technology controller parameterizing error**

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The technology controller has a parameterizing error.

Alarm value (r2124, interpret decimal):
- 1: The parameter value for the upper output limit of the technology controller p2291 is less than the parameter value of the lower output limit p2292.

**Remedy:**
- 1: Set p2291 to a higher value than p2292.

See also: p2291 (Technology controller maximum limiting), p2292 (Technology controller minimum limiting)

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**F07435 (N) Drive: Setting the ramp-function generator for sensorless vector control**

**Reaction:** OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3)

**Acknowledge:** IMMEDIATELY

**Cause:** During operation with sensorless vector control (r1407.1) the ramp-function generator was stopped (p1141). An internal setting command of the ramp-function generator output caused the set setpoint speed to be frozen.
List of faults and alarms

Remedy:
- de-activate the holding command for the ramp-function generator (p1141).
- suppress the fault (p2101, p2119). This is necessary if the ramp-function generator is held using jogging and the speed setpoint is simultaneously inhibited (r0898.6).

F07439 Drive: Higher current controller dynamic performance not possible

Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause:
The function "Current controller dynamics higher" (p1810.11 = 1) is selected, however is not supported by the power unit (r0192.27 = 0) or by the safety technology without encoder (9506 = 1, 3).
Fault value (r0949, interpret decimal):
1:
- firmware of the booksize power unit is not up-to-date.
- blocksize or S120 combi power unit was used.
2:
- Encoderless safety technology is used.

Remedy:
In general:
- Deselect the function "Current controller dynamics higher" (p1810.11 = 0) and if required, set the current, speed and position controller again or calculate (p0340 = 4).
For fault value = 1:
- If necessary, upgrade the firmware of the booksize power unit to a later version (version >= 4.4).
Note:
If the firmware has already been automatically upgraded, then only a POWER ON (switch-off/switch-on) is required.
- Use a booksize power unit (version >= 4.4).
For fault value = 2:
- If an encoder with Safety position actual values sensing is available (r0458[0...2].19 = 1), reparameterize the encoderless safety technology (p9506 = 1, 3) to safety technology with encoder (p9506 = 0).
See also: p1810 (Modulator configuration), p9506 (SI Motion function specification (processor 1))

A07530 Drive: Drive Data Set DDS not present

Reaction: NONE
Acknowledge: NONE
Cause:
The selected drive data set is not available (p0837 > p0180). The drive data set was not changed over.
See also: p0180 (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)
Remedy:
- select the existing drive data set.
- set up additional drive data sets.

A07531 Drive: Command Data Set CDS not present

Reaction: NONE
Acknowledge: NONE
Cause:
The selected command data set is not available (p0836 > p0170). The command data set was not changed over.
See also: p0810 (Command data set selection CDS bit 0), p0811 (Command data set selection CDS bit 1), r0836 (Command Data Set CDS selected)
Remedy:
- select the existing command data set.
- set up additional command data sets.

F07563 (A) Drive encoder: XIST1_ERW configuration incorrect

Reaction: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
An incorrect configuration was identified for the "Absolute position for incremental encoder" function.
Fault value (r0949, interpret decimal):
Fault cause:
1 (= 01 hex):
The "Absolute value for incremental encoder" function is not supported (r0459.13 = 0).
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
- yxxx dec: yy = fault cause, xx = encoder data set
Remedy:
For fault value = 1:
- upgrade the Sensor Module firmware version.
- check the mode (p4652 = 1, 3 requires the property r0459.13 = 1).
**F07800 Drive: No power unit present**

**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** The power unit parameters cannot be read or no parameters are stored in the power unit. It is possible that the DRIVE-CLiQ cable between the Control Unit and power unit is interrupted or defective. 
Note: This fault also occurs if an incorrect topology was selected in the commissioning software and this parameterization is then downloaded to the Control Unit. See also: r0200 (Power unit code number actual)  
**Remedy:**  
- carry out a POWER ON (power off/on) for all components. 
- check the DRIVE-CLiQ cable between the Control Unit and power unit. 
- check the power unit and replace if necessary. 
- after correcting the topology, the parameters must be again downloaded using the commissioning software.

**F07801 Drive: Motor overcurrent**

**Reaction:** OFF2 (NONE, OFF1, OFF3)  
**Acknowledge:** IMMEDIATELY  
**Cause:** The permissible motor limit current was exceeded. 
- effective current limit set too low. 
- current controller not correctly set. 
- U/f operation: Up ramp was set too short or the load is too high. 
- U/f operation: Short-circuit in the motor cable or ground fault. 
- U/f operation: Motor current does not match current of power unit. 
- Switch to rotating motor without flying restart function (p1200). 
Note: Limit current = 2 x minimum (p0640, 4 x p0305 x p0306) >= 2 x p0305 x p0306  
**Remedy:**  
- check the current limits (p0640). 
- vector control: Check the current controller (p1715, p1717). 
- U/f control: Check the current limiting controller (p1340 ... p1346). 
- increase the up ramp (p1120) or reduce the load. 
- check the motor and motor cables for short-circuit and ground fault. 
- check the motor for the star-delta configuration and rating plate parameterization. 
- check the power unit and motor combination. 
- Choose "flying restart" function (p1200) if switched to rotating motor.

**F07802 Drive: Infeed or power unit not ready**

**Reaction:** OFF2 (NONE)  
**Acknowledge:** IMMEDIATELY  
**Cause:** After an internal power-on command, the infeed or drive does not signal ready. 
- monitoring time is too short. 
- DC link voltage is not present. 
- associated infeed or drive of the signaling component is defective. 
- supply voltage incorrectly set.  
**Remedy:**  
- increase the monitoring time (p0857). 
- ensure that there is a DC link voltage. Check the DC link busbar. Enable the infeed. 
- replace the associated infeed or drive of the signaling component. 
- check the line supply voltage setting (p0210). 
See also: p0857 (Power unit monitoring time)

**A07805 (N) Drive: Power unit overload I2t**

**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** Alarm threshold for I2t overload (p0294) of the power unit exceeded. 
The response parameterized in p0290 becomes active. 
See also: p0290 (Power unit overload response)  
**Remedy:**  
- reduce the continuous load. 
- adapt the load duty cycle. 
- check the assignment of the motor and power unit rated currents.
### F07806  Drive: Regenerative power limit exceeded (F3E)

**Reaction:** OFF2 (IASC/DCBRAKE)

**Acknowledge:** IMMEDIATELY

**Cause:** For blocksize power units, types PM250 and PM260, the regenerative rated power r0206[2] was exceeded for more than 10 s.

See also: r0206 (Rated power unit power), p1531 (Power limit regenerative)

**Remedy:**
- increase the down ramp.
- reduce the driving load.
- use a power unit with a higher regenerative feedback capability.
- for vector control, the regenerative power limit in p1531 can be reduced so that the fault is no longer triggered.

### F07807  Drive: Short-circuit/ground fault detected

**Reaction:** OFF2 (NONE)

**Acknowledge:** IMMEDIATELY

**Cause:** A phase-phase short-circuit or ground fault was detected at the motor-side output terminals of the converter.

Fault value (r0949, interpret decimal):
1: Short-circuit, phases U-V
2: Short-circuit, phases U-W
3: Short-circuit, phases V-W
4: Ground fault with overcurrent
1xxxx: Ground fault with current in phase U detected (xxxx = component of the current in phase V in per mille)
2xxxx: Ground fault with current in phase V detected (xxxx = component of the current in phase U in per mille)

**Note:** Also when interchanging the line and motor cables is identified as a motor-side short circuit. Connecting to a motor that is either not de-energized or partially de-energized is possibly detected as ground fault.

**Remedy:**
- check the motor-side converter connection for a phase-phase short-circuit.
- rule-out interchanged line and motor cables.
- check for a ground fault.
- do not enable the pulses when connecting to a rotating motor without the "Flying restart" function activated (p1200).
- increase the de-energization time (p0347).
- If required, deactivate the monitoring (p1901).

### F07808 (A)  HF damping module: damping not ready

**Reaction:** OFF2 (NONE, OFF1, OFF3)

**Acknowledge:** IMMEDIATELY

**Cause:** When switching on or in the switched-on state, the HF damping module does not return a ready signal.

**Remedy:**
- Check the DRIVE-CLiQ wiring to the HF damping module.
- check the 24 V supply voltage.
- if required, replace the HF damping module.

**Note:** HF Damping Module

### F07810  Drive: Power unit EEPROM without rated data

**Reaction:** NONE

**Acknowledge:** IMMEDIATELY

**Cause:** No rated data are stored in the power unit EEPROM.

See also: p0205 (Power unit application), r0206 (Rated power unit power), r0207 (Rated power unit current), r0208 (Rated power unit line supply voltage), r0209 (Power unit, maximum current)

**Remedy:** Replace the power unit or inform Siemens Customer Service.

### A07850 (F)  External alarm 1

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The BICO signal for "external alarm 1" was triggered.

The condition for this external alarm is fulfilled.

See also: p2112 (External alarm 1)

**Remedy:** Eliminate the causes of this alarm.
### Faults and alarms

**List of faults and alarms**

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<tr>
<td>A07851 (F)</td>
<td>External alarm 2</td>
<td>NONE</td>
<td>NONE</td>
<td>The BICO signal for &quot;external alarm 2&quot; was triggered. The condition for this external alarm is fulfilled.</td>
<td>Eliminate the causes of this alarm.</td>
</tr>
<tr>
<td>A07852 (F)</td>
<td>External alarm 3</td>
<td>NONE</td>
<td>NONE</td>
<td>The BICO signal for &quot;external alarm 3&quot; was triggered. The condition for this external alarm is fulfilled.</td>
<td>Eliminate the causes of this alarm.</td>
</tr>
<tr>
<td>F07860 (A)</td>
<td>External fault 1</td>
<td>OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP2)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The BICO signal &quot;external fault 1&quot; was triggered. See also: p2106 (External fault 1)</td>
<td>Eliminate the causes of this fault.</td>
</tr>
<tr>
<td>F07861 (A)</td>
<td>External fault 2</td>
<td>OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP2)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The BICO signal &quot;external fault 2&quot; was triggered. See also: p2107 (External fault 2)</td>
<td>Eliminate the causes of this fault.</td>
</tr>
<tr>
<td>F07862 (A)</td>
<td>External fault 3</td>
<td>OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP2)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The BICO signal &quot;external fault 3&quot; was triggered. See also: p2108 (External fault 3), p3111 (External fault 3, enable), p3112 (External fault 3 enable negated)</td>
<td>Eliminate the causes of this fault.</td>
</tr>
</tbody>
</table>
| F07900 (N, A) | Drive: Motor blocked               | OFF2 (NONE, OFF1, OFF3, STOP2) | IMMEDIATELY         | Motor has been operating at the torque limit longer than the time specified in p2177 and below the speed threshold set in p2175. This signal can also be triggered if the speed is oscillating and the speed controller output repeatedly goes to its limit. It may also be the case that thermal monitoring of the power unit reduces the current limit (see p0290), thereby causing the motor to decelerate. See also: p2175 (Motor blocked speed threshold), p2177 (Motor blocked delay time) | - check that the motor can freely move.  
- check the torque limit: For a positive direction of rotation r1538, for a negative direction of rotation r1539.  
- check the parameter, message "Motor blocked" and if required, correct (p2175, p2177). |
| F07901     | Drive: Motor overspeed               | OFF2 (IASC/DCBRAKE)            | IMMEDIATELY         | The maximum permissible speed was either positively or negatively exceeded. The maximum permissible positive speed is formed as follows: Minimum (p1082, CI: p1085) + p2162. The maximum permissible negative speed is formed as follows: Maximum (-p1082, CI: 1088) - p2162 |                                                   |
### F07902 (N, A) Drive: Motor stalled

**Remedy:**
The following applies for a positive direction of rotation:
- Check r1084 and if required, correct p1082, C: p1085 and p2162.
The following applies for a negative direction of rotation:
- Check r1087 and if required, correct p1082, C: p1088 and p2162.
Activate pre-control of the speed limiting controller (p1401.7 = 1).
Increase the hysteresis for the overspeed signal p2162. This upper limit is dependent upon the maximum motor speed p0322 and the maximum speed p1082 of the setpoint channel.

**Reaction:**
OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP2)

**Acknowledge:** IMEDIATELY

**Cause:**
The system has identified that the motor has stalled for a time longer than is set in p2178.
- Fault value (r0949, interpret decimal):
  1: Reserved.
  2: Stall detection using r1408.12 (p1745).
- See also: p2178 (Motor stalled delay time)

**Remedy:**
Steps should always be taken to ensure that both motor data identification and the rotating measurement were carried out (see p1900, r3925).
- Check whether the drive stalls solely due to the load in controlled mode or when the speed setpoint is still zero. If yes, then increase the current setpoint using p1610.
- If the motor excitation time (p0346) was significantly reduced and the drive stalls when it is switched on and run immediately, p0346 should be increased again.
- Check the current limits (p0640, r0067, r0289). If the current limits are too low, then the drive cannot be magnetized.
- Check whether a line phase failure is affecting power unit PM230, PM250, PM260.
- Check whether the motor cables are disconnected (see A07929).
If there is no fault, then the fault tolerance (p1745) or the delay time (p2178) can be increased.

### A07903 Drive: Motor speed deviation

**Remedy:**
- Increase p2163 and/or p2166.
- Increase the torque/current/power limits.
- For closed-loop torque control: The speed setpoint should track the speed actual value.
- De-activate alarm with p2149.0 = 0.

### A07910 (N) Drive: Motor overtemperature

**Cause:**
- KTY or no sensor:
The measured motor temperature or the temperature of the motor temperature model 2 has exceeded the alarm threshold (p0604). The response parameterized in p0610 becomes active.
- PTC or bimetallic NC contact: The response threshold of 1650 Ohm was exceeded or the NC contact opened.
**Alarm value (r2124, interpret decimal):**
- 11: No output current reduction.
- 12: Output current reduction active.
**See also:** p0604 (Mot_temp_mod 1/KTY alarm threshold), p0610 (Motor overtemperature response)
Faults and alarms

List of faults and alarms

Remedy:
- check the motor load.
- check the motor ambient temperature.
- check KTY84.
- check overtemperatures of the motor temperature model 2 (p0626 ... p0628).

See also: p0612 (Mot_temp_mod activation), p0625 (Motor ambient temperature), p0626 (Motor overtemperature, stator core), p0627 (Motor overtemperature, stator winding), p0628 (Motor overtemperature rotor winding)

A07920  Drive: Torque/speed too low

Reaction: NONE
Acknowledge: NONE

Cause:
For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic (too low).
For p2193 = 2:
The speed signal from the external encoder (refer to p3230) deviates from the speed (r2169) (too low).

See also: p2181 (Load monitoring response)

Remedy:
- check the connection between the motor and load.
- adapt the parameterization corresponding to the load.

A07921  Drive: Torque/speed too high

Reaction: NONE
Acknowledge: NONE

Cause:
For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic (too high).
For p2193 = 2:
The speed signal from the external encoder (refer to p3230) deviates from the speed (r2169) (too high).

Remedy:
- check the connection between the motor and load.
- adapt the parameterization corresponding to the load.

A07922  Drive: Torque/speed out of tolerance

Reaction: NONE
Acknowledge: NONE

Cause:
For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic.
For p2193 = 2:
The speed signal from the external encoder (refer to p3230) deviates from the speed (r2169).

Remedy:
- check the connection between the motor and load.
- adapt the parameterization corresponding to the load.

F07923  Drive: Torque/speed too low

Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY

Cause:
For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic (too low).
For p2193 = 2:
The speed signal from the external encoder (refer to p3230) deviates from the speed (r2169) (too low).

Remedy:
- check the connection between the motor and load.
- adapt the parameterization corresponding to the load.

F07924  Drive: Torque/speed too high

Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY

Cause:
For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic (too high).
For p2193 = 2:
The speed signal from the external encoder (refer to p3230) deviates from the speed (r2169) (too high).

Remedy:
- check the connection between the motor and load.
- adapt the parameterization corresponding to the load.
**F07925**

**Drive: Torque/speed out of tolerance**

**Reaction:**
OFF1 (NONE, OFF2, OFF3)

**Acknowledge:**
IMMEDIATELY

**Cause:**
For p2193 = 1:
The torque deviates from the torque/speed envelope characteristic.

For p2193 = 2:
The speed signal from the external encoder (refer to p3230) deviates from the speed (r2169).

**Remedy:**
- check the connection between the motor and load.
- adapt the parameterization corresponding to the load.

---

**A07927**

**DC braking active**

**Reaction:**
NONE

**Acknowledge:**
NONE

**Cause:**
The motor is braked with DC current. DC braking is active.

1) A message with response DCBRK is active. The motor is braked with the braking current set in p1232 for the duration set in p1233. If the standstill threshold p1226 is undershot, then braking is prematurely canceled.

2) DC braking has been activated at binector input p1230 with the DC braking set (p1230 = 4). Braking current p1232 is injected until this binector input becomes inactive.

**Remedy:**
Not necessary.
The alarm automatically disappears once DC braking has been executed.

---

**A07929 (F)**

**Drive: No motor detected**

**Reaction:**
NONE

**Acknowledge:**
NONE

**Cause:**
The absolute current value is so small after enabling the inverter pulses that no motor is detected.

Note:
In the case of vector control and an induction motor, this alarm is followed by the fault F07902.

See also: p2179 (Output load identification current limit)

**Remedy:**
- check the motor feeder cables.
- reduce the threshold value (p2179), e.g. for synchronous motors.
- check the voltage boost of the U/f control (p1310).
- carry out a standstill measurement to set the stator resistance (p0350).

---

**F07935 (N)**

**Drive: Incorrect motor holding brake configuration**

**Reaction:**
NONE (OFF1, OFF2, OFF3)

**Acknowledge:**
IMMEDIATELY

**Cause:**
An incorrect motor holding brake configuration was detected.

Fault value (r0949, interpret decimal):
0:
A motor holding brake was detected where the brake control has not been configured (p1215 = 0). The brake control configuration was set to "motor holding brake the same as sequence control" (p1215 = 1) (only when commissioning for the first time).

For a chassis unit with Safe Brake Adapter (SBA), the interconnection p9621 = r9872.3 was established (only when commissioning for the first time).

For a parallel connection, the power unit was set in p7015, to which the motor holding brake is connected (only when commissioning for the first time).

1:
A motor holding brake was detected where the brake control has not been configured (p1215 = 0). The brake control configuration was left at "No motor holding brake available" (p1215 = 0).

11:
The identification had detected more than one motor holding brake for a parallel connection.

12:
For the parallel connection, in p0121 there is no valid component number for the power unit data set that is set in p7015.

13:
With the "Safe brake control" (SBC) function activated, an attempt was made to change the value in p7015.
Faults and alarms

List of faults and alarms

14:
For a parallel connection, the power units set in p7015 cannot be addressed.

Remedy:
For fault value = 0:
- No remedy required.
For fault value = 1:
- If required change the motor holding brake configuration (p1215 = 1, 2).
- If this fault value unexpectedly occurs, then the motor connections should be checked in order to rule out that they have been interchanged.
For fault value = 11:
For a parallel connection, only connect one motor holding brake.
For fault value = 12:
Check the setting of the power unit data set for a parallel connection (p7015).
For fault value = 13:
Before changing p7015, deactivate the "Safe brake control" function (SBC) (p9602).
For fault value = 14:
Check whether the power unit supports the brake control for a parallel connection (r9771.14).
Check whether there is a DRIVE-CLIQ communication error between the Control Unit and the power unit involved and, if required, carry out a diagnostics routine for the faults identified.
See also: p1215 (Motor holding brake configuration)

F07936 Drive: load failure
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The load monitoring has detected a load failure.
Remedy:
- check the sensor.
- if necessary, de-activate the load monitoring (p2193).
See also: p2193 (Load monitoring configuration), p3232 (Load monitoring failure detection)

F07950 (A) Motor parameter incorrect
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The motor parameters were incorrectly entered while commissioning (e.g. p0300 = 0, no motor)
Fault value (r0949, interpret decimal):
Parameter number involved.
See also: p0300, p0301, p0304, p0305, p0307, p0310, p0311, p0314, p0316, p0320, p0322, p0323
Remedy:
Compare the motor data with the rating plate data and if required, correct.
See also: p2193 (Load monitoring configuration), p3232 (Load monitoring failure detection)

F07967 Drive: Pole position identification internal fault
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: A fault has occurred during the pole position identification routine.
Only for internal Siemens troubleshooting.
Remedy:
Carry out a POWER ON.

F07968 Drive: Lq-Ld measurement incorrect
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A fault has occurred during the Lq-Ld measurement.
Fault value (r0949, interpret decimal):
10: Stage 1: The ratio between the measured current and zero current is too low.
12: Stage 1: The maximum current was exceeded.
15: Second harmonic too low.
16: Drive converter too small for the measuring technique.
17: Abort due to pulse inhibit.
Remedy:
For fault value = 10:
Check whether the motor is correctly connected.
Replace the power unit involved.
De-activate technique (p1909).
For fault value = 12:
Check whether motor data have been correctly entered.
De-activate technique (p1909).

For fault value = 16:
De-activate technique (p1909).

For fault value = 17:
Repeat technique.

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<tr>
<td>F07969</td>
<td>Drive: Incorrect pole position identification</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>A fault has occurred during the pole position identification routine. Fault value (r0949, interpret decimal): 1: Current controller limited 2: Motor shaft locked. 10: Stage 1: The ratio between the measured current and zero current is too low. 11: Stage 2: The ratio between the measured current and zero current is too low. 12: Stage 1: The maximum current was exceeded. 13: Stage 2: The maximum current was exceeded. 14: Current difference to determine the +d axis too low. 15: Second harmonic too low. 16: Drive converter too small for the measuring technique. 17: Abort due to pulse inhibit. 18: First harmonic too low. 20: Pole position identification requested with the motor shaft rotating and activated &quot;flying restart&quot; function.</td>
<td>For fault value = 1: Check whether the motor is correctly connected. Check whether motor data have been correctly entered. Replace the power unit involved. For fault value = 2: Bring the motor into a no-load condition. For fault value = 10: When selecting p1980 = 4: Increase the value for p0325. When selecting p1980 = 1: Increase the value for p0329. Check whether the motor is correctly connected. Replace the power unit involved. For fault value = 11: Increase the value for p0329. Check whether the motor is correctly connected. Replace the power unit involved. For fault value = 12: When selecting p1980 = 4: Reduce the value for p0325. When selecting p1980 = 1: Reduce the value for p0329. Check whether motor data have been correctly entered. For fault value = 13: Reduce the value for p0329. Check whether motor data have been correctly entered. For fault value = 14: Increase the value for p0329. For fault value = 15: Increase the value for p0325. Motor not sufficiently anisotropic, change the technique (p1980 = 1 or 10). For fault value = 16: Change the technique (p1980). For fault value = 17: Repeat technique. For fault value = 18: Increase the value for p0329. Saturation not sufficient, change the technique (p1980 = 10). For fault value = 20: Before carrying out a pole position identification routine ensure that the motor shaft is absolutely stationary (zero speed).</td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

A07976  Drive: Fine encoder calibration activated
Reaction:  NONE
Acknowledge:  NONE
Cause:  The alarm indicates the phases of the fine encoder calibration using an alarm value.
Alarm value (interpret decimal):
1: Fine encoder calibration active.
2: Rotating measurement started (set the setpoint speed > 40 % rated motor speed)
3: Rotating measurement lies within the speed and torque range.
4: Rotating measurement successful: pulse inhibit can be initiated to accept the values.
5: Fine encoder calibration is calculated.
10: Speed too low, rotating measurement interrupted.
12: Torque too high, rotating measurement interrupted.
Remedy:  Re alarm value = 10:
Increase the speed.
Re alarm value = 12:
Bring the drive into a no-load condition.

A07980  Drive: Rotating measurement activated
Reaction:  NONE
Acknowledge:  NONE
Cause:  The rotating measurement (automatic speed controller optimization) is activated.
The rotating measurement is carried out at the next power-on command.
See also: p1960 (Rotating measurement selection)
Remedy:  Not necessary.
The alarm disappears automatically after the speed controller optimization has been successfully completed or for the setting p1900 = 0.

A07981  Drive: Enable signals for the rotating measurement missing
Reaction:  NONE
Acknowledge:  NONE
Cause:  The rotating measurement cannot be started due to missing enable signals.
Remedy:  - acknowledge faults that are present.
- establish missing enable signals.
See also: r0002 (Drive operating display), r0046 (Missing enable sig)

F07983  Drive: Rotating measurement saturation characteristic
Reaction:  OFF1 (NONE, OFF2)
Acknowledge:  IMMEDIATELY
Cause:  A fault has occurred while determining the saturation characteristic.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The rotor flux did not reach a steady-state condition.
3: The adaptation circuit did not reach a steady-state condition.
4: The adaptation circuit was not enabled.
5: Field weakening active.
6: The speed setpoint was not able to be approached as the minimum limiting is active.
7: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
8: The speed setpoint was not able to be approached as the maximum limiting is active.
9: Several values of the determined saturation characteristic are not plausible.
10: Saturation characteristic could not be sensibly determined because load torque too high.
Remedy:  For fault value = 1:
- the total drive moment of inertia is far higher than that of the motor (p0341, p0342).
De-select rotating measurement (p1960), enter the moment of inertia p0342, re-calculate the speed controller p0340 = 4 and repeat the measurement.
Re fault value = 1 ... 2:
- increase the measuring speed (p1961) and repeat the measurement.
Faults and alarms

List of faults and alarms

Re fault value = 1 ... 4:
- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- carry out a motor data identification routine (p1910).
- if required, reduce the dynamic factor (p1967 < 25 %).
For fault value = 5:
- the speed setpoint (p1961) is too high. Reduce the speed.
For fault value = 6:
- adapt the speed setpoint (p1961) or minimum limiting (p1080).
For fault value = 7:
- adapt the speed setpoint (p1961) or suppression (skip) bandwidths (p1091 ... p1094, p1101).
For fault value = 8:
- adapt the speed setpoint (p1961) or maximum limit (p1082, p1083 and p1086).
Re fault value = 9, 10:
- the measurement was carried out at an operating point where the load torque is too high. Select a more suitable operating point, either by changing the speed setpoint (p1961) or by reducing the load torque. The load torque may not be varied while making measurements.
Note:
The saturation characteristic identification routine can be disabled using p1959.1.
See also: p1959 (Rotating measurement configuration)

F07984
Drive: Speed controller optimization, moment of inertia
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause:
A fault has occurred while identifying the moment of inertia.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The speed setpoint was not able to be approached as the minimum limiting is active.
3. The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
4. The speed setpoint was not able to be approached as the maximum limiting is active.
5: It is not possible to increase the speed by 10% as the minimum limiting is active.
6: It is not possible to increase the speed by 10% as the suppression (skip) bandwidth is active.
7: It is not possible to increase the speed by 10% as the maximum limiting is active.
8: The torque difference after the speed setpoint step is too low in order to be able to still reliably identify the moment of inertia.
9: Too few data to be able to reliably identify the moment of inertia.
10: After the setpoint step, the speed either changed too little or in the incorrect direction.
11: The identified moment of inertia is not plausible.
Remedy:
For fault value = 1:
- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- carry out a motor data identification routine (p1910).
- if required, reduce the dynamic factor (p1967 < 25 %).
Re fault value = 2, 5:
- adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).
Re fault value = 3, 6:
- adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).
Re fault value = 4, 7:
- adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).
For fault value = 8:
- the total drive moment of inertia is far higher than that of the motor (refer to p0341, p0342). De-select rotating measurement (p1960), enter the moment of inertia p0342, re-calculate the speed controller p0340 = 4 and repeat the measurement.
For fault value = 9:
- check the moment of inertia (p0341, p0342). After the change, re-calculate (p0340 = 3 or 4).
For fault value = 10:
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
Note:
The moment of inertia identification routine can be disabled using p1959.2.
See also: p1959 (Rotating measurement configuration)
Faults and alarms

List of faults and alarms

F07985  Drive: Speed controller optimization (oscillation test)

Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY

Cause: A fault has occurred during the vibration test.
- Fault value (r0949, interpret decimal):
  1: The speed did not reach a steady-state condition.
  2: The speed setpoint was not able to be approached as the minimum limiting is active.
  3: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
  4: The speed setpoint was not able to be approached as the maximum limiting is active.
  5: Torque limits too low for a torque step.
  6: No suitable speed controller setting was found.

Remedy:
- For fault value = 1:
  - check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
  - check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
  - carry out a motor data identification routine (p1910).
  - if required, reduce the dynamic factor (p1967 < 25%).
- For fault value = 2:
  - adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).
- For fault value = 3:
  - adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).
- For fault value = 4:
  - adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).
- For fault value = 5:
  - increase the torque limits (e.g. p1520, p1521).
- For fault value = 6:
  - reduce the dynamic factor (p1967).
  - disable the vibration test (p1959.4 = 0) and repeat the rotating measurement.
See also: p1959 (Rotating measurement configuration)

F07986  Drive: Rotating measurement ramp-function generator

Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY

Cause: During the rotating measurements, problems with the ramp-function generator occurred.
- Fault value (r0949, interpret decimal):
  1: The positive and negative directions are inhibited.

Remedy:
- For fault value = 1:
  - Enable the direction (p1110 or p1111).

F07988  Drive: Rotating measurement, no configuration selected

Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY

Cause: When configuring the rotating measurement (p1959), no function was selected.

Remedy:
Select at least one function for automatic optimization of the speed controller (p1959).
See also: p1959 (Rotating measurement configuration)

F07990  Drive: Incorrect motor data identification

Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY

Cause: A fault has occurred during the identification routine.
- Fault value (r0949, interpret decimal):
  1: Current limit value reached.
  2: Identified stator resistance lies outside the expected range 0.1 ... 100% of Zn.
  3: Identified rotor resistance lies outside the expected range 0.1 ... 100% of Zn.
  4: Identified stator reactance lies outside the expected range 50 ... 500 % of Zn.
  5: Identified magnetizing reactance lies outside the expected range 50 ... 500 % of Zn.
  6: Identified rotor time constant lies outside the expected range 10 ms ... 5 s.
  7: Identified total leakage reactance lies outside the expected range 4 ... 50 % of Zn.
  8: Identified stator leakage reactance lies outside the expected range 2 ... 50% of Zn.
  9: Identified rotor leakage reactance lies outside the expected range 2 ... 50% of Zn.
10: Motor has been incorrectly connected.
11: Motor shaft rotates.
20: Identified threshold voltage of the semiconductor devices lies outside the expected range 0 ... 10 V.
30: Current controller in voltage limiting.
40: At least one identification contains errors. The identified parameters are not saved to prevent inconsistencies.
50: The selected sampling time is too low for the motor identification (p0115[0]).

Remedy:
- Re fault value = 1 ... 40:
  - check whether motor data have been correctly entered in p0300, p0304 ... p0311.
  - is there an appropriate relationship between the motor power rating and that of the power unit? The ratio of the power unit to the rated motor current should not be less than 0.5 and not be greater than 4.
- check connection type (star-delta).
- check whether inductance in p0233 is correctly set.
- check whether motor has been correctly connected (star-delta).
  - check the power cable connections.
  - check the motor.
  - check the CT.
  - Perform a motor data identification with a higher sampling time, and after this, change to the required higher sampling time (p0115[0]).

A07991 (N) Drive: Motor data identification activated

Reaction: NONE
Acknowledge: NONE
Cause: The motor data identification routine is activated.
The motor data identification routine is carried out at the next power-on command.
If rotating measurement is selected (see p1900, p1960), it will not be possible to save the parameter assignment.
Once motor data identification has been completed or de-activated, the option to save the parameter assignment will be made available again.
See also: p1910 (Motor data identification selection)
Remedy: Not necessary.
The alarm automatically disappears after the motor data identification routine has been successfully completed or for the setting p1900 = 0.

A07994 (F, N) Drive: motor data identification not performed

Reaction: NONE
Acknowledge: NONE
Cause: The "vector control" mode has been selected and a motor data identification has still not been performed.
The alarm is initiated when changing the drive data set (see r0051) in the following cases:
- vector control is parameterized in the actual drive data set (p1300 >= 20).
  - motor data identification has still not been performed in the actual drive data set (see r3925).
  - perform motor data identification (see p1900).
  - if required, parameterize "U/f control" (p1300 < 20).
  - switch over to a drive data set, in which the conditions do not apply.

F08010 (N, A) CU: Analog-to-digital converter

Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The analog-to-digital converter on the Control Unit has not supplied any converted data.
Remedy: - check the power supply.
- replace Control Unit.
### Faults and alarms

#### List of faults and alarms

**F08501 (N, A)**  
**PROFINET: Setpoint timeout**  
**Reaction:** OFF3 (IASC/DCBRAKE, NONE, OFF1, OFF2, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY  
**Cause:**  The reception of setpoints from PROFINET has been interrupted.  
- bus connection interrupted.  
- controller switched off.  
- controller set into the STOP state.  
**Remedy:**  
- Restore the bus connection and set the controller to RUN.  
- check the set monitoring time if the error persists.

**F08502 (A)**  
**PROFINET: Monitoring time sign-of-life expired**  
**Reaction:** OFF1 (OFF2, OFF3)  
**Acknowledge:** IMMEDIATELY  
**Cause:**  
- The monitoring time for the sign-of-life counter has expired.  
- The connection to the PROFINET interface was interrupted.  
**Remedy:**  
- carry out a POWER ON (power off/on).  
- contact the Hotline.

**A08511 (F)**  
**PROFINET: Receive configuration data invalid**  
**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.  
  2: Too many PZD data words for output or input to a drive object. Maximum of 12 words are possible.  
  3: Uneven number of bytes for input or output.  
  501: PROFIsafe parameter error (e.g. F_dest).  
  502: PROFIsafe telegram does not match.  
**Remedy:**  
- Check the receive configuration data.  
- Re alarm value = 2:  
  - Check the number of data words for output and input to a drive object.  
  - Check the set PROFIsafe address (p9610).  
- Re alarm value = 501:  
  - Check the enable of F-DI (p9501.30).

**A08526 (F)**  
**PROFINET: No cyclic connection**  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:**  
- There is no connection to a PROFINET controller.  
**Remedy:**  
- Establish the cyclic connection and activate the controller with cyclic operation.  
- Check the parameters "Name of Station" and "IP of Station" (r61000, r61001).

**A08565**  
**PROFINET: Consistency error affecting adjustable parameters**  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:**  
- A consistency error was detected when activating the configuration (p8925 = 1) for the PROFINET interface. The currently set configuration has not been activated.  
- Possible causes:  
  - IP address, subnet mask or default gateway is not correct  
  - IP address or station name used twice in the network  
  - station name contains invalid characters, etc.  
- See also: p8920 (PN Name of Station), p8921 (PN IP address of station), p8922 (PN Default Gateway of Station), p8923 (PN Subnet Mask of Station)  
**Remedy:**  
- Check the required interface configuration (p8920 and following), correct if necessary, and activate (p8925 = 1).  
- See also: p8925 (PN interface configuration)
List of faults and alarms

F08700 (A) CAN: Communications error
Reaction: OFF3 (NONE, OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: A CAN communications error has occurred.
Fault value (r0949, interpret decimal):
1: The error counter for the send telegrams has exceeded the BUS OFF value 255. The bus disables the CAN controller.
   - bus cable short circuit.
   - incorrect baud rate.
   - incorrect bit timing.
2: The master no longer interrogated the CAN node status longer than for its "life time". The "life time" is obtained from the "guard time" (p8604[0]) multiplied by the "life time factor" (p8604[1]).
   - bus cable interrupted.
   - bus cable not connected.
   - incorrect baud rate.
   - incorrect bit timing.
   - master fault.
Note: The fault response can be set as required using p8641.
Remedy:
- check the bus cable
- check the baud rate (p8622).
- check the bit timing (p8623).
- check the master.
The CAN controller must be manually restarted with p8608 = 1 after the cause of the fault has been resolved!

F08701 CAN: NMT state change
Reaction: OFF3
Acknowledge: IMMEDIATELY
Cause: A CANopen NMT state transition from "operational" to "pre-operational" or after "stopped".
Fault value (r0949, interpret decimal):
1: CANopen NMT state transition from "operational" to "pre-operational".
2: CANopen NMT state transition from "operational" to "stopped".
Note: In the NMT state "pre-operational", process data cannot be transferred and in the NMT state "stopped", no process data and no service data can be transferred.
Remedy: Not necessary.
Acknowledge the fault and continue operation.

F08702 (A) CAN: RPDO Timeout
Reaction: OFF3 (NONE, OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: The monitoring time of the CANopen RPDO telegram has expired because the bus connection was either interrupted or the CANopen Master was switched-off.
Remedy:
- check the bus cable
- check the master.
- If required, increase the monitoring time (p8699).

A08751 CAN: Telegram loss
Reaction: NONE
Acknowledge: NONE
Cause: The CAN controller has lost a receive message (telegram).
Remedy: Reduce the cycle times of the receive messages.

A08752 CAN: Error counter for error passive exceeded
Reaction: NONE
Acknowledge: NONE
Cause: The error counter for the send or receive telegrams has exceeded the value 127.
Faults and alarms

List of faults and alarms

Remedy: 
- check the bus cable
- set a higher baud rate (p8622).
- check the bit timing and if required optimize (p8623).

A08753 CAN: Message buffer overflow
Reaction: NONE
Acknowledge: NONE
Cause: A message buffer overflow.
Alarm value (r2124, interpret decimal):
1: Non-cyclic send buffer (SDO response buffer) overflow.
2: Non-cyclic receive buffer (SDO receive buffer) overflow.
3: Cyclic send buffer (PDO send buffer) overflow.
Remedy: 
- check the bus cable.
- set a higher baud rate (p8622).
- check the bit timing and if required optimize (p8623).
- reduce the cycle times of the SDO receive messages.
- SDO request from master only after SDO feedback for previous SDO request.

A08754 CAN: Incorrect communications mode
Reaction: NONE
Acknowledge: NONE
Cause: In the "operational" mode, an attempt was made to change parameters p8700 ... p8737.
Remedy: Change to the "pre-operational" or "stopped" mode.

A08755 CAN: Obj cannot be mapped
Reaction: NONE
Acknowledge: NONE
Cause: The CANopen object is not provided for the Process Data Object (PDO) Mapping.
Remedy: Use a CANopen object intended for the PDO mapping or enter 0.
The following objects can be mapped in the Receive Process Data Object (RPDO) or Transmit Process Data Object (TPDO):
- RPDO: 6040 hex, 6060 hex, 6071 hex; 5800 hex - 580F hex; 5820 hex - 5827 hex
- TPDO: 6041 hex, 6061 hex, 6063 hex, 6069 hex, 606B hex, 606C hex, 6074 hex; 5810 hex - 581F hex; 5830 hex - 5837 hex
Only sub-index 0 of the specified objects can be mapped.
Note: As long as A08755 is present, the COB-ID cannot be set to valid.

A08757 CAN: Set COB-ID invalid
Reaction: NONE
Acknowledge: NONE
Cause: For online operation, the appropriate COB-ID must be set invalid before mapping.
Example:
Mapping for RPDO 1 should be changed (p8710[0]).
--> set p8710[0] = C00006E0 hex (invalid COB-ID)
--> set p8710[0] as required.
--> p8710[0] enter a valid COB-ID
Remedy: Set the COB-ID to invalid.

A08759 CAN: PDO COB-ID already available
Reaction: NONE
Acknowledge: NONE
Cause: An existing PDO COB-ID was allocated.
Remedy: Select another PDO COB-ID.
## List of faults and alarms

### A08800  PROFenergy energy-saving mode active

**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The PROFenergy energy-saving mode is active  
Alarm value (r2124, interpret decimal):  
Mode ID of the active PROFenergy energy-saving mode.  
See also: r5600 (Pe energy saving mode ID)  
**Remedy:** The alarm automatically disappears when the energy-saving mode is exited.  
**Note:** After receiving the PROFenergy command "End_Pause" via PROFINET, the energy-saving mode is exited.

### A08802  PROFenergy not possible to switch off incremental encoder supply

**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The incremental encoder is used for the closed-loop position control. This means that its power supply cannot be switched off during the PROFenergy energy-saving mode, otherwise it would lose its position actual value.  
Alarm value (r2124, interpret decimal): Encoder number  
**Remedy:** The alarm automatically disappears when the energy-saving mode is exited.  
**Note:** After receiving the PROFenergy command "End_Pause" via PROFINET, the energy-saving mode is exited.

### F13009  Licensing OA application not licensed

**Reaction:** OFF1  
**Acknowledge:** IMMEDIATELY  
**Cause:** At least one OA application which is under license does not have a license.  
**Note:** Refer to r4955 and p4955 for information about the installed OA applications.  
- enter and activate the license key for OA applications under license (p9920, p9921).  
- if necessary, de-activate unlicensed OA applications (p4956).

### F13100  Know-how protection: Copy protection error

**Reaction:** OFF1  
**Acknowledge:** IMMEDIATELY  
**Cause:** The know-how protection with copy protection for the memory card is active.  
An error has occurred when checking the memory card.  
Fault value (r0949, interpret decimal):  
0: A memory card is not inserted.  
1: An invalid memory card is inserted (not SIEMENS).  
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 memory card copy protection)  
**Remedy:**  
- fault value = 0, 1:  
- Insert the correct memory card and carry out POWER ON.  
- 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 memory card copy protection)
Faults and alarms

List of faults and alarms

F13101  
Know-how protection: Copy protection cannot be activated

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.
1: An invalid memory card is inserted (not SIEMENS).
Note: KHP: Know-How Protection
Remedy:
- Insert a valid memory card.
- Try to activate copy protection again (p7765).
See also: p7765 (KHP memory card copy protection)

F13102  
Know-how protection: Consistency error of the protected data

Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: An error was identified when checking the consistency of the protected files. As a consequence, the project on the memory card cannot be run.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex: yyyy = object number, xxxx = fault cause
xxxx = 1: A file has a checksum error.
xxxx = 2: The files are not consistent with one another.
Note: KHP: Know-How Protection
Remedy:
- Replace the project on the memory card.
- Restore the factory setting and download again.

F30001  
Power unit: Overcurrent

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 current of motor much greater than that of power unit.
- High discharge and post-charging current for line supply voltage interruptions.
- High post-charging currents for overload when motoring and DC link voltage dip.
- Short-circuit currents at power-on due to the missing line reactor.
- power cables are not correctly connected.
- power cables exceed the maximum permissible length.
- power unit defective.
- line phase interrupted.
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.
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.
- check the line supply quality.
- Reduce motor load.
- Correct connection of 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.
- check the line supply phases.

### F30002 Power unit: DC link voltage, overvoltage

**Reaction:**
OFF2

**Acknowledge:**
IMMEDIATELY

**Cause:**
The power unit has detected an overvoltage condition in the DC link.
- motor regenerates too much energy.
- line supply voltage too high.
- line phase interrupted.
- DC-link voltage control switched off.
- dynamic response of DC-link voltage controller excessive or insufficient.

**Fault value (r0949, interpret decimal):**
DC link voltage at the time of trip [0.1 V].

**Remedy:**
- increase the ramp-down time (p1121).
- set the rounding times (p1130, p1136). This is particularly recommended in U/f operation to relieve the DC link voltage controller with rapid ramp-down times of the ramp-function generator.
- Activate the DC link voltage controller (p1240, p1280).
- adapt the dynamic response of the DC-link voltage controller (p1243, p1247, p1283, p1287).
- check the line supply voltage and setting in p0210.
- check and correct the phase assignment at the power unit.
- check the line supply phases.

See also: p0210 (Drive unit line supply voltage), p1240 (Vdc controller configuration (vector control))

### F30003 Power unit: DC link voltage, undervoltage

**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 phase interrupted.

**Note:**
The monitoring threshold for the DC link undervoltage is the minimum of the following values:
- for a calculation, refer to p0210.

**Remedy:**
- check the line supply voltage
- check the line supply phases.

See also: p0210 (Drive unit line supply voltage)

### F30004 Power unit: Overtemperature heat sink AC inverter

**Reaction:**
OFF2

**Acknowledge:**
IMMEDIATELY

**Cause:**
The temperature of the power unit heat sink has exceeded the permissible limit value.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.

**Fault value (r0949):**
Temperature [1 bit = 0.01 °C].

**Remedy:**
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.

**Notice:**
This fault can only be acknowledged after this alarm threshold for alarm A05000 has been undershot.

See also: p1800 (Pulse frequency setpoint)
F30005  Power unit: Overload I²t

**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** The power unit was overloaded (r0036 = 100 %).  
- the permissible rated power unit current was exceeded for an inadmissibly long time.  
- the permissible load duty cycle was not maintained.  
Fault value (r0949, interpret decimal):  
I²t [100 % = 16384].  
**Remedy:**  
- reduce the continuous load.  
- adapt the load duty cycle.  
- check the motor and power unit rated currents.  
- reduce the current limit (p0640).  
- during operation with U/f characteristic: reduce the integral time of the current limiting controller (p1341).  
See also: r0036 (Power unit overload I²t), r0206 (Rated power unit power), p0307 (Rated motor power)

F30011  Power unit: Line phase failure in main circuit

**Reaction:** OFF2 (OFF1)  
**Acknowledge:** IMMEDIATELY  
**Cause:** At the power unit, the DC link voltage ripple has exceeded the permissible limit value.  
Possible causes:  
- A line phase has failed.  
- The 3 line phases are inadmissibly unsymmetrical.  
- the fuse of a phase of a main circuit has ruptured.  
- A motor phase has failed.  
Fault value (r0949, interpret decimal):  
Only for internal Siemens troubleshooting.  
**Remedy:**  
- check the main circuit fuses.  
- Check whether a single-phase load is distorting the line voltages.  
- check the motor feeder cables.

F30012  Power unit: Temperature sensor heat sink wire breakage

**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

**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
### List of faults and alarms

**F30015 (N, A)**  
**Power unit: Phase failure motor cable**  
**Reaction:** OFF2 (NONE, OFF1, OFF3)  
**Acknowledge:** IMMEDIATELY  
**Cause:** A phase failure in the motor feeder cable was detected.  
The signal can also be output in the following cases:  
- The motor is correctly connected, but the drive has stalled in U/f control. In this case, a current of 0 A is possibly measured in one phase due to asymmetry of the currents.  
- the motor is correctly connected, however the closed-speed control is instable and therefore an oscillating torque is generated.  
**Note:** Chassis power units do not feature phase failure monitoring.  
**Remedy:**  
- check the motor feeder cables.  
- increase the ramp-up or ramp-down time (p1120) if the drive has stalled in U/f control.  
- check the speed controller settings.

**A30016 (N)**  
**Power unit: Load supply switched out**  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The DC link voltage is too low.  
**Alarm value (r2124, interpret decimal):** DC link voltage at the time of trip [0.1 V].  
**Remedy:** Under certain circumstances, the AC line supply is not switched on.

**F30017**  
**Power unit: Hardware current limit has responded too often**  
**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.  
- 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:**  
- check the motor data.  
- 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**  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** Power unit has detected a ground fault.  
- ground fault in the power cables.  
- winding fault or ground fault at the motor.  
- CT defective.  
- when the brake is applied, this causes the hardware DC current monitoring to respond.  
**Fault value (r0949, interpret decimal):** Absolute value, summation current [32767 = 271 % rated current].
Faults and alarms

List of faults and alarms

F30022 Power unit: Monitoring U_ce

Reaction: OFF2
Acknowledge: POWER ON

Cause:
In the power unit, the monitoring of the collector-emitter voltage (U_ce) of the semiconductor has responded. Possible causes:
- fiber-optic cable interrupted.
- power supply of the IGBT gating module missing.
- short-circuit at the power unit output.
- defective semiconductor in the power unit.

Fault value (r0949, interpret binary):
- Bit 0: Short-circuit in phase U
- Bit 1: Short circuit in phase V
- Bit 2: Short-circuit in phase W
- Bit 3: Light transmitter enable defective
- Bit 4: U_ce group fault signal interrupted

See also: r0949 (Fault value)

Remedy:
- check the fiber-optic cable and if required, replace.
- check the power supply of the IGBT gating module (24 V).
- check the power cable connections.
- select the defective semiconductor and replace.

F30024 Power unit: Overtemperature thermal model

Reaction: OFF2
Acknowledge: IMMEDIATELY

Cause:
The temperature difference between the heat sink and chip has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.

See also: r0037 (Power unit temperatures)

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.
- reduce the pulse frequency if this is higher than the rated pulse frequency.
- if DC braking is active: reduce braking current (p1232).

F30025 Power unit: Chip overtemperature

Reaction: OFF2
Acknowledge: IMMEDIATELY

Cause:
The chip temperature of the semiconductor has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.

Fault value (r0949, interpret decimal):
Temperature difference between the heat sink and chip [0.01 °C].

Remedy:
- adapt the load duty cycle.
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
F30027  
**Power unit: Precharging DC link time monitoring**

**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 DC link has either a ground fault or a short-circuit.  
8) Pre-charging circuit may be defective.  

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: Reserved.  

- `xxxx` = Missing internal enable signals, power unit (inverted bit-coded, FFFF hex -> all internal enable signals available)  
Bit 0: Power supply of the IGBT gating shut down.  
Bit 1: Ground fault detected.  
Bit 2: Peak current intervention.  
Bit 3: I2t exceeded.  
Bit 4: Thermal model overtemperature calculated.  
Bit 5: (heat sink, gating module, power unit) overtemperature measured.  
Bit 6: Reserved.  
Bit 7: Overvoltage detected.  
Bit 8: Power unit has completed pre-charging, ready for pulse enable.  
Bit 9: Reserved.  
Bit 10: Overcurrent detected.  
Bit 11: Reserved.  
Bit 12: Reserved.  
Bit 13: Vce fault detected, transistor de-saturated due to overcurrent/short-circuit.  
Bit 14: Undervoltage detected.  

See also: p0210 (Drive unit line supply voltage)

**Remedy:**  
In general:  
- check the line supply voltage at the input terminals.  
- check the line supply voltage setting (p0210).  
- wait 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 capacitance of the DC link and, if necessary, reduce it in accordance with the maximum permissible DC link capacitance (see relevant Equipment Manual).
Faults and alarms

List of faults and alarms

Re 7):
- check the DC link for a ground fault or short circuit.
See also: p0210 (Drive unit line supply voltage)

A30031  Power unit: Hardware current limiting, phase U
  Reaction: NONE
  Acknowledge: NONE
  Cause:
  Hardware current limit for phase U responded. The pulsing in this phase is inhibited for one pulse period.
  - closed-loop control is incorrectly parameterized.
  - fault in the motor or in the power cables.
  - the power cables exceed the maximum permissible length.
  - motor load too high
  - power unit defective.
  Note:
  Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.
  Remedy:
  - check the motor data and if required, recalculate the control parameters (p0340 = 3). As an alternative, run a motor
data identification (p1910 = 1, p1960 = 1).
  - check the motor circuit configuration (star/delta).
  - check the motor load.
  - check the power cable connections.
  - check the power cables for short-circuit or ground fault.
  - check the length of the power cables.

A30032  Power unit: Hardware current limiting, phase V
  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, phase W
  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.
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<tr>
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<th>Cause</th>
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<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>A30034</td>
<td>Power unit: Internal overtemperature</td>
<td>NONE</td>
<td>NONE</td>
<td>The alarm threshold for internal overtemperature has been reached. If the temperature inside the unit continues to increase, fault F30036 may be triggered. - ambient temperature might be too high. - insufficient cooling, fan failure. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.</td>
<td>- check the ambient temperature. - check the fan for the inside of the unit.</td>
<td></td>
</tr>
<tr>
<td>F30035</td>
<td>Power unit: Air intake overtemperature</td>
<td>OFF1 (OFF2)</td>
<td>IMMEDIATELY</td>
<td>The air intake in the power unit has exceeded the permissible temperature limit. For air-cooled power units, the temperature limit is at 55 °C. - ambient temperature too high. - insufficient cooling, fan failure.</td>
<td>- check whether the fan is running. - check the fan elements. - check whether the ambient temperature is in the permissible range. Notice: This fault can only be acknowledged after this alarm threshold for alarm A05002 has been undershot.</td>
<td></td>
</tr>
<tr>
<td>F30036</td>
<td>Power unit: Internal overtemperature</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>The temperature inside the drive converter has exceeded the permissible temperature limit. - insufficient cooling, fan failure. - overload. - ambient temperature too high.</td>
<td>- check whether the fan is running. - check the fan elements. - 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.</td>
<td></td>
</tr>
<tr>
<td>F30037</td>
<td>Power unit: Rectifier overtemperature</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>The temperature in the rectifier of the power unit has exceeded the permissible temperature limit. - insufficient cooling, fan failure. - overload. - ambient temperature too high. - line supply phase failure.</td>
<td>- check whether the fan is running. - check the fan elements. - check whether the ambient temperature is in the permissible range. - check the motor load. - check the line supply phases. Notice: This fault can only be acknowledged after this alarm threshold for alarm A05004 has been undershot.</td>
<td></td>
</tr>
</tbody>
</table>
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A30042  Power unit: Fan operating time reached or exceeded
Reaction: NONE
Acknowledge: NONE
Cause: The maximum operating time of the fan in the power unit is set in p0252. This message indicates the following:
Fault value (r0949, interpret decimal):
0: The maximum fan operating time is 500 hours.
1: The maximum fan operating time has been exceeded.
Remedy: Replace the fan in the power unit and reset the operating hours counter to 0 (p0251 = 0).

A30049  Power unit: Internal fan faulty
Reaction: NONE
Acknowledge: NONE
Cause: The internal fan has failed.
Remedy: Check the internal fan and replace if necessary.

F30052  EEPROM data error
Reaction: OFF2
Acknowledge: POWER ON
Cause: EEPROM data error of the power unit module.
Fault value (r0949, interpret decimal):
0, 2, 3, 4: The EEPROM data read in from the power unit module is inconsistent.
1: EEPROM data is not compatible to the firmware of the Control Unit.
Remedy: Replace power unit module.

A30054 (F)  Power unit: Undervoltage when opening the brake
Reaction: NONE
Acknowledge: NONE
Cause: When the brake is being opened, it is detected that the power supply voltage is less than 24 V - 10% = 21.6V.
Alarm value (r2124, interpret decimal):
Supply voltage fault [0.1 V].
Example:
Alarm value = 195 --> voltage = 19.5 V
Remedy: Check the 24 V voltage for stability and value.

F30055  Power unit: Braking chopper overcurrent
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: An overcurrent condition has occurred in the braking chopper.
Remedy: - check whether the braking resistor has a short circuit.
- for an external braking resistor, check whether the resistor may have been dimensioned too small.
Note: The braking chopper is only enabled again at pulse enable after the fault has been acknowledged.

A30057  Power unit: Line asymmetry
Reaction: NONE
Acknowledge: NONE
Cause: Frequencies have been detected on the DC link voltage that would suggest line asymmetry or failure of a line phase. It is also possible that a motor phase has failed.
Fault F30011 is output if the alarm is present and at the latest after 5 minutes.
The precise duration depends on the power unit type and the particular frequencies.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - check the line phase connection.
- check the motor feeder cable connections.
If there is no phase failure of the line or motor, then line asymmetry is involved.
- reduce the power in order to avoid fault F30011.

F30059  Power unit: Internal fan faulty
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The internal power unit fan has failed and is possibly defective.
Remedy: Check the internal fan and replace if necessary.

F30071  No new actual values received from the Power Module
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: More than one actual value telegram from the power unit module has failed.
Remedy: Check the interface (adjustment and locking) to the power unit module.

F30072  Setpoints can no longer be transferred to the Power Module
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: More than one setpoint telegram was not able to be transferred to the power unit module.
Remedy: Check the interface (adjustment and locking) to the power unit module.

F30074 (A)  Communication error between the Control Unit and Power Module
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Communications between the Control Unit and Power Module via the interface no longer possible. The Control Unit may have been withdrawn or is incorrectly inserted.
Fault value (r0949, interpret hexadecimal):
0 hex: The Control Unit was withdrawn from the Power Module during operation.
1 hex: The Control Unit was withdrawn from the Power Module during operation, although the encoderless safe motion monitoring functions are enabled. This is not supported. After re-inserting the Control Unit in operation, communications to the Power Module no longer possible.
20A hex: The Control Unit was inserted on a Power Module, which has another code number.
20B hex: The Control Unit was inserted on a Power Module, which although it has the same code number, has a different serial number. The Control Unit executes an automatic warm restart to accept the new calibration data.
Remedy: For fault value = 0 and 20A hex:
Insert the Control Unit on an appropriate Power Module and continue operation. If required, carry out a POWER ON of the Control Unit.
For fault value = 1 hex:
Carry out a POWER ON of the Control Unit.

F30080  Power unit: Current increasing too quickly
Reaction: OFF2
Acknowledge: IMMEDIATELY
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.
- power cables are not correctly connected.
- power cables exceed the maximum permissible length.
- power unit defective.
Fault value (r0949, interpret bitwise binary):
Bit 0: Phase U.
Bit 1: Phase V.
Bit 2: Phase W.
Faults and alarms

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F30081  Power unit: Switching operations too frequent

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.
- power cables are not correctly connected.
- power cables exceed the maximum permissible length.
- power unit defective.

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.
- check the power cable connections.
- check the length of the power cables.
- replace power unit.

F30105  PU: Actual value sensing fault

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.

A30502  Power unit: DC link overvoltage

Reaction: NONE
Acknowledge: NONE

Cause:
The power unit has detected overvoltage in the DC link on a pulse inhibit.
- device connection voltage too high.
- line reactor incorrectly dimensioned.
Alarm value (r0949, interpret decimal):
DC link voltage [1 bit = 100 mV].
See also: r0070 (Actual DC link voltage)

Remedy:
- check the device supply voltage (p0210).
- check the dimensioning of the line reactor.
See also: p0210 (Drive unit line supply voltage)
### F30600 SI P2: STOP A initiated

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:**
- The drive-integrated "Safety Integrated" function on processor 2 has detected an error and initiated a STOP A.
- Forcing checking procedure of the safety shutdown path via processor 2 unsuccessful.
- Subsequent response to fault F30611 (defect in a monitoring channel).

Fault value (r0949, interpret decimal):
- 0: Stop request from processor 1.
- 1005: Pulses suppressed although STO not selected and there is no internal STOP A present.
- 1010: Pulses enabled although STO is selected or an internal STOP A is present.
- 9999: Subsequent response to fault F30611.

**Remedy:**
- Select Safe Torque Off and de-select again.
- For fault value = 9999:
  - Carry out diagnostics for fault F30611.
- Note:
  - STO: Safe Torque Off

### F30611 SI P2: Defect in a monitoring channel

**Reaction:** NONE (OFF1, OFF2, OFF3)

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:**
- The drive-integrated "Safety Integrated" function on processor 2 has detected a fault in the crosswise data comparison between the two monitoring channels and has initiated a STOP F.
- As a consequence of this fault, fault F30600 (SI P2: STOP A initiated) is output.

Fault value (r0949, interpret decimal):
- 0: Stop request from processor 1.
- 1 ... 999: Number of the cross-compared data that resulted in this fault. This number is also displayed in r9795.
- 1000: Watchdog timer has expired.
- Within the time of approx. 5 x p9650, alternatively, the following was defined:
  - Too many switching operations have occurred at the F-DI.
  - Via PROFIsafe, STO was too frequently initiated (also as subsequent response).
- 1001, 1002: Initialization error, change timer / check timer.
- 2000: Status of the STO selection for both monitoring channels are different.
- 2001: Feedback of the safe pulse suppression on the two monitoring channels are different.
- 6000 ... 6999: Error in the PROFIsafe control.

For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.

The significance of the individual message values is described in safety message C01711.

**Remedy:**
- For fault values 1 ... 999 described in "Cause":
  - Check the cross data comparison that resulted in a STOP F.
  - Carry out a POWER ON (power off/on).
- For fault value = 1000:
  - Check the wiring of the F-DI (contact problems).
- PROFIsafe: Remove contact problems/faults at the PROFIBUS master/PROFINET controller.
- Re fault value = 1001, 1002:
  - Carry out a POWER ON (power off/on).
  - Check the tolerance time F-DI changeover and if required, increase the value (p9650/p9850).
  - Check the causes of the STOP selection in r9772. When the SI Motion functions are active (p9501 = 1), STO can also be selected using these functions.
- Re fault value = 6000 ... 6999:
  - Refer to the description of the message values in safety message C01711.
  - Contact the Hotline
  - Replace Control Unit.
### Faults and alarms

#### List of faults and alarms

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<tbody>
<tr>
<td><strong>N30620 (F, A)</strong></td>
<td>SI P2: Safe Torque Off active</td>
<td>NONE</td>
<td>NONE</td>
<td>The &quot;Safe Torque Off&quot; (STO) function has been selected on processor 2 using the input terminal and is active.</td>
<td>Not necessary.</td>
</tr>
<tr>
<td><strong>F30625</strong></td>
<td>SI P2: Sign-of-life error in safety data</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The drive-integrated &quot;Safety Integrated&quot; function on processor 2 has detected an error in the sign-of-life of the safety data and initiated a STOP A.</td>
<td>- select Safe Torque Off and de-select again. - carry out a POWER ON (power off/on). - check whether additional faults are present and if required, perform diagnostics. - check the electrical cabinet design and cable routing for EMC compliance</td>
</tr>
<tr>
<td><strong>F30649</strong></td>
<td>SI P2: Internal software error</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>An internal error in the Safety Integrated software on processor 2 has occurred.</td>
<td>- carry out a POWER ON (power off/on). - re-commission the &quot;Safety Integrated&quot; function and carry out a POWER ON. - contact the Hotline. - replace Control Unit.</td>
</tr>
<tr>
<td><strong>F30650</strong></td>
<td>SI P2: Acceptance test required</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The drive-integrated &quot;Safety Integrated&quot; function on processor 2 requires an acceptance test.</td>
<td>130: Safety parameters for processor 2 not available.</td>
</tr>
</tbody>
</table>
Remedy:
For fault value = 130:
- carry out safety commissioning routine.
For fault value = 1000:
- again carry out safety commissioning routine.
- replace the memory card or Control Unit.
- Using STARTER, activate the safety parameters for the drive involved (change settings, copy parameters, activate settings).
For fault value = 2000:
- check the safety parameters on processor 2 and adapt the reference checksum (p9899).
For fault value = 2003:
- Carry out an acceptance test and generate an acceptance report.
For fault value = 9999:
- carry out diagnostics for the other safety-related fault that is present.
See also: p9799 (SI setpoint checksum SI parameters (processor 1)), p9899 (SI setpoint checksum SI parameters (processor 2))

---

F30651 SI P2: Synchronization with Control Unit unsuccessful
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
The drive-integrated "Safety Integrated" function requires synchronization of the safety time slices on processor 1 and processor 2. This synchronization was unsuccessful.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy:
- carry out a POWER ON (power off/on).

---

F30655 SI P2: Align monitoring functions
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
An error has occurred when aligning the Safety Integrated monitoring functions on processor 1 and processor 2. No common set of supported SI monitoring functions was able to be determined.
- there is a communication error between processor 1 and processor 2 or communication has failed.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance.

---

F30656 SI P2: Parameter processor 2 parameter error
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
When accessing the Safety Integrated parameters for the processor 2 in the non-volatile memory, an error has occurred.
Note:
This fault results in a STOP A that can be acknowledged.
Fault value (r0949, interpret decimal):
129: Safety parameters for processor 2 corrupted.
131: Internal software error on processor 1.
255: Internal software error on processor 2.
Remedy:
- re-commission the safety functions.
- replace the memory card or Control Unit.
F30659  SI P2: Write request for parameter rejected

**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The write request for one or several Safety Integrated parameters on processor 2 was rejected.  
**Note:**  
This fault does not result in a safety stop response.  
Fault value (r0949, interpret decimal):  
10: An attempt was made to enable the STO function although this cannot be supported.  
15: An attempt was made to enable the motion monitoring functions integrated in the drive although these cannot be supported.  
16: An attempt was made to enable the PROFIsafe communications although this cannot be supported.  
20: An attempt was made to simultaneously enable both the drive-integrated motion monitoring functions via integrated F-DI and STO via terminals, even though these cannot be supported at the same time.  
See also: r9771, r9871

**Remedy:** Re fault value = 10, 15, 16, 18:  
- check whether there are faults in the safety function alignment (F01655, F30655) and if required, carry out diagnostics for the faults involved.  
- use a Control Unit that supports the required function.  
**Note:** STO: Safe Torque Off

F30662  Error in internal communications

**Reaction:** OFF2  
**Acknowledge:** POWER ON  
**Cause:** A module-internal communication error has occurred.  
Fault value (r0949, interpret hexadecimal):  
Only for internal Siemens troubleshooting.

**Remedy:**  
- carry out a POWER ON (power off/on).  
- upgrade firmware to later version.  
- contact the Hotline.

F30664  Error while booting

**Reaction:** OFF2  
**Acknowledge:** POWER ON  
**Cause:** An error has occurred during booting.  
Fault value (r0949, interpret hexadecimal):  
Only for internal Siemens troubleshooting.

**Remedy:**  
- carry out a POWER ON (power off/on).  
- upgrade firmware to later version.  
- contact the Hotline.

F30665  SI P2: System is defective

**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** A system defect was detected before the last boot or in the actual one. The system might have been rebooted (reset).  
Fault value (r0949, interpret hexadecimal):  
200000 hex, 400000 hex:  
- Fault in the actual booting/operation.  
Additional values:  
- defect before the last time that the system booted.

**Remedy:**  
- carry out a POWER ON (power off/on).  
- upgrade firmware to later version.  
- contact the Hotline.  
Re fault value = 400000 hex:  
- ensure that the Control Unit is connected to the Power Module.
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<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
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</thead>
<tbody>
<tr>
<td>A30666 (F)</td>
<td><strong>SI Motion P2: Steady-state (static) 1 signal at the F-DI for safety-relevant acknowledgement</strong></td>
<td>NONE</td>
<td>NONE</td>
<td>A logical 1 signal is present at the F-DI configured in p10106 for more than 10 seconds. If, at the F-DI no acknowledgment was performed for safe acknowledgment, then a steady-state logical and 0 signal must be present. This avoids unintentional safety-relevant acknowledgement (or the Internal Event Acknowledge signal) if a wire breaks or one of the two digital inputs bounces.</td>
<td>Set the fail-safe digital input (F-DI) to a logical 0 signal (p10106).</td>
</tr>
<tr>
<td>F30680</td>
<td><strong>SI Motion P2: Checksum error safety monitoring functions</strong></td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The actual checksum calculated by processor 2 and entered in r9398 over the safety-relevant parameters does not match the reference checksum saved in p9399 at the last machine acceptance. Safety-relevant parameters have been changed or a fault is present.</td>
<td>Note: This fault results in a STOP A that can be acknowledged. Fault value (r0949, interpret decimal): 0: Checksum error for SI parameters for motion monitoring. 1: Checksum error for SI parameters for component assignment. Remedy: - check the safety-relevant parameters and if required, correct. - set the reference checksum to the actual checksum. - execute the function &quot;Copy RAM to ROM&quot;. - perform a POWER ON if safety parameters requiring a POWER ON have been modified. - carry out an acceptance test.</td>
</tr>
<tr>
<td>F30681</td>
<td><strong>SI Motion P2: Incorrect parameter value</strong></td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The parameter cannot be parameterized with this value. Note: This message does not result in a safety stop response. Fault value (r0949, interpret decimal): yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter yyyy = 0: no additional information available. xxxx = 9301: It is not permissible to enable the function &quot;n&lt;nx hysteresis and filtering&quot; (p9301.16) in conjunction with the function &quot;extended functions without selection&quot; (p9801.5). xxxx = 9385: For Safety encoderless and synchronous motor, p9385 must be set to 4.</td>
<td>Remedy: Correct the parameter value.</td>
</tr>
<tr>
<td>F30682</td>
<td><strong>SI Motion P2: Monitoring function not supported</strong></td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The monitoring function enabled in p9301, p9501, p9601 or p9801 is not supported in this firmware version. Note: This message does not result in a safety stop response. Fault value (r0949, interpret decimal): 1: Monitoring function SLP not supported (p9301.1). 2: Monitoring function SCA not supported (p9301.7 and p9301.8 ... 15). 3: Monitoring function SLS override not supported (p9301.5). 4: Monitoring function external ESR activation not supported (p9301.4). 5: Monitoring function F-DI in PROFIsafe not supported (p9301.30).</td>
<td></td>
</tr>
</tbody>
</table>
Faults and alarms

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6: Enable actual value synchronization not supported (p9301.3).
9: Monitoring function not supported by the firmware or enable bit not used.
24: Monitoring function SDI not supported.

Remedy:
Deselect the monitoring function involved.

Note:
SCA: Safe Cam
SLP: Safely-Limited Position
SLS: Safely-Limited Speed
SDI: Safe Direction (safe motion direction)
See also: p9301, p9501, p9601, p9801, r9871

F30683  SI Motion P2: SLS enable missing

Reaction:  OFF2
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  The safety-relevant function "SLS" is not enabled in p9301 although other safety-relevant monitoring functions are enabled.
Note:  This message does not result in a safety stop response.
Remedy:  Enable the function "SLS" (p9301.0) and carry out a POWER ON.
Note:  Save the changes before POWER ON (copy from RAM to ROM).
SLS: Safely-Limited Speed
See also: p9301 (SI Motion enable safety functions (processor 2))

F30692  SI Motion P2: Incorrect parameter value encoderless

Reaction:  OFF2
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  For encoderless motion monitoring functions, the parameter cannot be parameterized with this value.
Note:  This message does not result in a safety stop response.
Fault value (r0949, interpret decimal):
Parameter number with the incorrect value.
See also: p9301 (SI Motion enable safety functions (processor 2))
Remedy:  Correct the parameter value or de-select encoderless motion monitoring functions.
See also: p9301 (SI Motion enable safety functions (processor 2)), p9501 (SI Motion enable safety functions (processor 1))

A30693 (F)  SI P2: Safety parameter settings changed, POWER ON required

Reaction:  NONE
Acknowledge:  NONE
Cause:  Safety parameters have been changed; these will only take effect following a POWER ON.
Notice:  All changed parameters of the safety motion monitoring functions will only take effect following a POWER ON.
Alarm value (r2124, interpret decimal):
Parameter number of the safety parameter which has changed, necessitating a POWER ON.
Remedy:  - execute the function "Copy RAM to ROM".
- carry out a POWER ON (power off/on).

C30700  SI Motion P2: STOP A initiated

Reaction:  OFF2
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  The drive is stopped via a STOP A (pulses are suppressed via the safety shutdown path of processor 1).
Possible causes:
- stop request from processor 1.
- Pulses not suppressed after test stop selection.
- subsequent response to the message C30706 "SI Motion P2: SAM/SBR limit exceeded".
- subsequent response to the message C30714 "SI Motion P2: Safely-Limited Speed exceeded".
- subsequent response to the message C30701 "SI Motion P2: STOP B initiated".
Remedy:
- remove the cause of the fault on the monitoring channel of processor 1.
- check the shutdown path of processor 2.
- carry out a diagnostics routine for message C30706.
- carry out a diagnostics routine for message C30714.
- carry out a diagnostics routine for message C30701.
- replace Power Module.
- replace Control Unit.

This message can be acknowledged via F-DI or PROFIsafe.

F-DI: Failsafe Digital Input
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe brake ramp monitoring)

C30701  SI Motion P2: STOP B initiated
Reaction:  NONE (OFF3)
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  The drive is stopped via a STOP B (braking along the OFF3 deceleration ramp).
Possible causes:
- stop request from processor 1.
- subsequent response to the message C30714 "SI Motion P2: Safely-Limited Speed exceeded".
- subsequent response to the message C30711 "SI Motion P2: Defect in a monitoring channel".
- subsequent response to the message C30707 "SI Motion P2: tolerance for safe operating stop exceeded".

Remedy:
- remove the cause of the fault on the monitoring channel of processor 1.
- carry out a diagnostics routine for message C30714.
- carry out a diagnostics routine for message C30711.
- carry out a diagnostics routine for message C30707.

This message can be acknowledged via F-DI or PROFIsafe.

Note:
F-DI: Failsafe Digital Input
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe brake ramp monitoring)

C30706  SI Motion P2: SAM/SBR limit exceeded
Reaction:  NONE
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  Motion monitoring functions with set acceleration monitoring (p9306 = 3):
SAM - safe acceleration monitoring. After initiating STOP B (SS1) the velocity has exceeded the selected tolerance.
Motion monitoring functions with set brake ramp monitoring (p9306 = 1):
SBR - Safe brake ramp monitoring. After initiating STOP B (SS1) or SLS changeover to the lower speed stage, the
speed has exceeded the selected tolerance.

The drive is shut down by the message C30700 "SI Motion P2: STOP A initiated".

Remedy:
Check the braking behavior and, if necessary, adapt the tolerance for the parameter settings of the "SAM" or the
"SBR" function.

This message can be acknowledged without a POWER ON as follows:
- motion monitoring functions integrated in the drive: via F-DI or PROFIsafe.

Note:
F-DI: Failsafe Digital Input
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe brake ramp monitoring)
See also: p9348 (SI Motion SAM actual velocity tolerance (processor 2)), p9381 (SI Motion brake ramp reference value (processor 2)), p9382 (SI Motion brake ramp delay time (processor 2)), p9383 (SI Motion brake ramp monitoring time (processor 2)), p9548 (SI Motion SAM actual velocity tolerance (processor 1))

C30711  SI Motion P2: Defect in a monitoring channel
Reaction:  NONE
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  When cross-comparing the two monitoring channels, the drive detected a difference between the input data or results
of the monitoring functions and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e.
safe operation is no longer possible.
If at least one monitoring function is active, then message C30701 "SI Motion: STOP B initiated" is output.
The following message values may also occur in the following cases if the cause that is explicitly mentioned does
not apply:
Faults and alarms

List of faults and alarms

- synchronization error between processor 1 and processor 2.

Message value (r2124, interpret decimal):

Note: The significance of the individual message values is described in safety message C01711.

0 ... 999:
Number of the cross-compared data that resulted in this message.

The significance of the individual message values is described in safety message C01711.

1000: Watchdog timer has expired. Too many signal changes have occurred at the F-DI.

1001: Initialization error of watchdog timer.

1011: Acceptance test status between the monitoring channels differ.

1020: Cyc. communication failure between the monit. cycles.

1040: Pulses suppressed with active encoderless monitoring functions.

1041: Current absolute value too low (encoderless)

1042: Current/voltage plausibility error

1043: Too many acceleration phases

1044: Actual current values plausibility error.

6000 ... 6166:
PROFIsafe message values (PROFIsafe driver for PROFIBUS DP V1/V2 and PROFInet).
For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
See also: r9725 (SI Motion, diagnostics STOP F)

Remedy:
Re message value = 1040:
- de-select encoderless monitoring functions, select and de-select STO.
- if monitoring function is active, issue "SLS" pulse enable within 5 s of de-selecting STO.
Re other message values:
- the significance of the individual message values is described in safety message C01711.

Note:
This message can be acknowledged via F-DI or PROFIsafe.

C30712 SI Motion P2: Defect in F-IO processing

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause:
When cross checking and comparing the two monitoring channels, the drive detected a difference between parameters or results of the F-IO processing and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.

The safety message C30711 with message value 0 is also displayed due to initiation of STOP F.
If at least one monitoring function is active, then safety message C30701 "SI Motion: STOP B initiated" is output.

Message value (r2124, interpret decimal):
Number of the cross-compared data that resulted in this message.
See safety message C01712 for a description of the message values.

Remedy:
- check parameterization in the parameters involved and correct if required.
- ensure equality by copying the SI data to processor 2 and then carry out an acceptance test.

Note:
This message can be acknowledged via F-DI or PROFIsafe.

C30714 SI Motion P2: Safely-Limited Speed exceeded

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause:
The drive had moved faster than that specified by the velocity limit value (p9331). The drive is stopped as a result of the configured stop response (p9363).

Message value (r2124, interpret decimal):
100: SLS1 exceeded.
200: SLS2 exceeded.
300: SLS3 exceeded.
400: SLS4 exceeded.

Remedy:
- check the traversing/motion program in the control.
- check the limits for "SLS" function and if required, adapt (p9331).

Note:
This message can be acknowledged via F-DI or PROFIsafe.

SLS: Safely-Limited Speed
See also: p9331 (SI Motion SLS limit values (processor 2)), p9363 (SI Motion SLS stop response (processor 2))
C30716  SI Motion P2: Tolerance for safe motion direction exceeded

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The tolerance for the "safe motion direction" function was exceeded. The drive is stopped as a result of the configured stop response (p9366).
Message value (r9749, interpret decimal):
0: Tolerance for the "safe motion direction positive" function exceeded.
1: Tolerance for the "safe motion direction negative" function exceeded.

Remedy:
- check the traversing/motion program in the control.
- check the tolerance for "SDI" function and if required, adapt (p9364).
This message can be acknowledged as follows:
- Deselect the "SDI" function and select again.
- Perform a safe acknowledgment via F-DI or PROFIsafe.

Note:
SDI: Safe Direction (safe motion direction)
SI: Safety Integrated
See also: p9364 (SI Motion SDI tolerance (processor 2)), p9365 (SI Motion SDI delay time (processor 2)), p9366 (SI Motion SDI stop response (processor 2))

C30770  SI Motion P2: Discrepancy error affecting the failsafe inputs

Reaction: NONE

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The fail-safe digital inputs (F-DI) show a different state longer than that parameterized in p10002 / p10102.
Fault value (r0949, interpret binary):
Bit 0: Discrepancy error for F-DI 0
Bit 1: Discrepancy error for F-DI 1

Note:
If several discrepancy errors occur consecutively, then this fault is only signaled for the first error that occurs.

Remedy:
- check the wiring of the F-DI (contact problems).

Note:
This message can be acknowledged via F-DI or PROFIsafe.
Discrepancy errors of an F-DI can only be completely acknowledged if safe acknowledgement was carried out once the cause of the error was resolved (p10006 or acknowledgment via PROFIsafe). As long as safety acknowledgement was not carried out, the corresponding F-DI stays in the safe state internally.
For cyclic switching operations at the F-DI, it may be necessary to adapt the discrepancy time to the switching frequency.
If the period of a cyclic switching pulse has the order of magnitude of double the value of p10002, then the following formulas must be checked.
p10002 < (tp / 2) - td (discrepancy time must be less than half the period minus the actual discrepancy time)
p10002 >= p9500 (discrepancy time must be no less than P9500)
p10002 > td (discrepancy time must be greater than the switch discrepancy time which may actually apply)
td = possible actual discrepancy time (in ms) that can occur with a switching operation. This must correspond to at least 1 SI sampling cycle (see p9500),

Note:
When debounce p10017 is active, the discrepancy time is directly specified by the debounce time.
If the period of a cyclic switching pulse has the order of magnitude of twice the debounce time, then the following formulas should be checked.
p10002 < p10017 + 1 ms - td
p10002 > td
p10002 >= p9500

Example:
For a 12 ms SI sampling cycle and a switching frequency of 110 ms (p10017 = 0), the maximum discrepancy time which can be set is as follows:
p10002 <= (110/2 ms) - 12 ms = 43 ms
Rounded-off, p10002 <= 36 ms is obtained (since the discrepancy time can only be accepted as a whole SI sampling cycle, the value will need to be rounded up or down to a whole SI sampling time value if the result is not an exact multiple of an SI sampling cycle).

Note:
F-DI: Failsafe Digital Input
Faults and alarms

List of faults and alarms

C30798  SI Motion P2: Test stop running
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The test stop is active.
Remedy: Not necessary.
The message is withdrawn when the test stop is finished.

C30799  SI Motion P2: Acceptance test mode active
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The acceptance test mode is active.
Remedy: Not necessary.
The message is withdrawn when exiting the acceptance test mode.

N30800 (F)  Power unit: Group signal
Reaction: OFF2
Acknowledge: NONE
Cause: The power unit has detected at least one fault.
Remedy: Evaluate the other messages that are presently available.

F30802  Power unit: Time slice overflow
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A time slice overflow has occurred.
Remedy: - carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.

F30804 (N, A)  Power unit: CRC
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.

F30805  Power unit: EPROM checksum error
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
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

| 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. |

### F30850 Power unit: Internal software error

| 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. |
| Remedy: | - replace power unit.  
- if required, upgrade the firmware in the power unit.  
- contact the Hotline. |

### F30875 Power unit DRIVE-CLiQ (CU): Supply voltage failed

| 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. |

### F30903 Power unit: I2C bus error occurred

| Reaction: | OFF2 (IASC/DCBRAKE, NONE, OFF1, 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: | Re fault value = 80000000 hex:  
- upgrade firmware to later version.  
Re fault value = 00000001 hex ... 0000FFFF hex:  
- replace the module. |

### A30920 (F) Temperature sensor fault

| 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 > 2120 Ohm).  
2: Measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm). |
| Remedy: | - make sure that the sensor is connected correctly.  
- replace the sensor. |
### Faults and alarms

#### List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| F30950     | Power unit: Internal software error              | OFF2                            | POWER ON            | An internal software error has occurred. Fault value (r0949, interpret decimal): Information about the fault source. Only for internal Siemens troubleshooting. | - If necessary, upgrade the firmware in the power unit to a later version.  
- contact the Hotline.                                                  |
| A30999 (F, N) | Power unit: Unknown alarm                        | NONE                            | NONE                | 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. | - replace the firmware on the power unit by an older firmware version (r0128).  
- upgrade the firmware on the Control Unit (r0018).                      |
| F31152 (N, A) | Encoder 1: Maximum input frequency exceeded    | ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2) | PULSE INHIBIT       | The maximum input frequency of the encoder evaluation has been exceeded. Fault value (r0949, interpret decimal): Actual input frequency in Hz. | - Reduce the speed.  
- Use an encoder with a lower pulse number (p0408).                      |
| F31160 (N, A) | Encoder 1: Analog sensor channel A failed      | ENCODER (IASC/DCBRAKE, NONE)    | PULSE INHIBIT       | 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). | - 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). |
| F31161 (N, A) | Encoder 1: Analog sensor channel B failed      | ENCODER (IASC/DCBRAKE, NONE)    | PULSE INHIBIT       | 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). | - 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). |
List of faults and alarms

F31163 (N, A) Encoder 1: Analog sensor position value exceeds limit value

Reaction: ENCODER (IASC/DCBRAKE, NONE)

Acknowledge: PULSE INHIBIT

Cause: The position value has exceeded the permissible range of -0.5 ... +0.5.
- Fault value (r0949, interpret decimal):
  1: Position value from the LVDT sensor.
  2: Position value from the encoder characteristic.

Remedy: For fault value = 1:
- Check the LVDT ratio (p4678).
- Check the reference signal connection at track B.
For fault value = 2:
- Check the coefficients of the characteristic (p4663 ... p4666).

A31442 (F, N) Encoder 1: Battery voltage pre-alarm

Reaction: NONE

Acknowledge: NONE

Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer sufficient to check the multiturn information.

Remedy: Replace battery.

A31460 (N) Encoder 1: Analog sensor channel A failed

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).

A31461 (N) Encoder 1: Analog sensor channel B failed

Reaction: NONE

Acknowledge: NONE

Cause: The input voltage of the analog sensor is outside the permissible limits.
- Alarm value (r2124, interpret decimal):
  1: Input voltage outside detectable measuring range.
  2: Input voltage outside the measuring range set in (p4675).
  3: The absolute value of the input voltage has exceeded the range limit (p4676).

Remedy: Re alarm value = 1:
- Check the output voltage of the analog sensor.
Re alarm value = 2:
- Check the voltage setting for each encoder period (p4675).
Re alarm value = 3:
- Check the range limit setting and increase it if necessary (p4676).
Faults and alarms

List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| A31462 (N) | Encoder 1: Analog sensor, no channel active | 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 | NONE | NONE | The position value has exceeded the permissible range of -0.5 ... +0.5.  
Alarm value (r2124, interpret decimal):  
1: Position value from the LVDT sensor.  
2: Position value from the encoder characteristic. | 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 | NONE | NONE | 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. | - check the plug connections  
- replace the encoder or encoder cable |
| F31912 | Encoder 1: Device combination is not permissible | ENCODER (IASC/DCBRAKE, NONE) | PULSE INHIBIT | The selected device combination is not supported.  
Fault value (r0949, interpret decimal):  
1003: The connected measuring unit cannot be operated with the EnDat 2.2 converter. For instance, the measuring unit has a pulse number/resolution of 2^n.  
1005: The type of measuring unit (incremental) is not supported by the EnDat 2.2 converter.  
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 | 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
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.

A31930 (N)  Encoder 1: Data logger has saved data
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
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.

F32152 (N, A)  Encoder 2: Maximum input frequency exceeded
Reaction: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The maximum input frequency of the encoder evaluation has been exceeded.
Fault value (r0949, interpret decimal):
Actual input frequency in Hz.
Remedy:
- Reduce the speed.
- Use an encoder with a lower pulse number (p0408).
## List of faults and alarms

### F32160 (N, A) Encoder 2: Analog sensor channel A failed
- **Reaction:** ENCORDER (IASC/DCBRAKE, NONE)
- **Acknowledge:** PULSE INHIBIT
- **Cause:** The input voltage of the analog sensor is outside the permissible limits.
  - Fault value (r0949, interpret decimal):
    1: Input voltage outside detectable measuring range.
    2: Input voltage outside the measuring range set in (p4673).
    3: The absolute value of the input voltage has exceeded the range limit (p4676).
- **Remedy:**
  - For fault value = 1:
    - check the output voltage of the analog sensor.
  - For fault value = 2:
    - check the voltage setting for each encoder period (p4673).
  - For fault value = 3:
    - check the range limit setting and increase it if necessary (p4676).

### F32161 (N, A) Encoder 2: Analog sensor channel B failed
- **Reaction:** ENCORDER (IASC/DCBRAKE, NONE)
- **Acknowledge:** PULSE INHIBIT
- **Cause:** The input voltage of the analog sensor is outside the permissible limits.
  - Fault value (r0949, interpret decimal):
    1: Input voltage outside detectable measuring range.
    2: Input voltage outside the measuring range set in (p4675).
    3: The absolute value of the input voltage has exceeded the range limit (p4676).
- **Remedy:**
  - For fault value = 1:
    - check the output voltage of the analog sensor.
  - For fault value = 2:
    - check the voltage setting for each encoder period (p4675).
  - For fault value = 3:
    - check the range limit setting and increase it if necessary (p4676).

### F32163 (N, A) Encoder 2: Analog sensor position value exceeds limit value
- **Reaction:** ENCORDER (IASC/DCBRAKE, NONE)
- **Acknowledge:** PULSE INHIBIT
- **Cause:** The position value has exceeded the permissible range of -0.5 ... +0.5.
  - Fault value (r0949, interpret decimal):
    1: Position value from the LVDT sensor.
    2: Position value from the encoder characteristic.
- **Remedy:**
  - 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).

### A32442 (F, N) Encoder 2: Battery voltage pre-alarm
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer sufficient to check the multiturn information.
- **Remedy:** Replace battery.

### A32460 (N) Encoder 2: Analog sensor channel A failed
- **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

<table>
<thead>
<tr>
<th>Reaction:</th>
<th>NONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause: | The input voltage of the analog sensor is outside the permissible limits. Alarm value (r2124, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside the measuring range set in (p4675).
3: The absolute value of the input voltage has exceeded the range limit (p4676). |
| Remedy: | Re alarm value = 1:
- check the output voltage of the analog sensor.
Re alarm value = 2:
- check the voltage setting for each encoder period (p4675).
Re alarm value = 3:
- check the range limit setting and increase it if necessary (p4676). |

### A32462 (N) Encoder 2: Analog sensor, no channel active

<table>
<thead>
<tr>
<th>Reaction:</th>
<th>NONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>Channel A and B are not activated for the analog sensor.</td>
</tr>
</tbody>
</table>
| Remedy: | - activate channel A and/or channel B (p4670).
- check the encoder configuration (p0404.17). |

### A32463 (N) Encoder 2: Analog sensor position value exceeds limit value

<table>
<thead>
<tr>
<th>Reaction:</th>
<th>NONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause: | The position value has exceeded the permissible range of -0.5 ... +0.5. Alarm value (r2124, interpret decimal):
1: Position value from the LVDT sensor.
2: Position value from the encoder characteristic. |
| Remedy: | Re alarm value = 1:
- Check the LVDT ratio (p4678).
- check the reference signal connection at track B.
Re alarm value = 2:
- check the coefficients of the characteristic (p4663 ... p4666). |

### A32470 (F, N) Encoder 2: Soiling detected

<table>
<thead>
<tr>
<th>Reaction:</th>
<th>ENCODER (IASC/DCBRAKE, NONE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledge:</td>
<td>PULSE INHIBIT</td>
</tr>
<tr>
<td>Cause:</td>
<td>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.</td>
</tr>
</tbody>
</table>
| Remedy: | - check the plug connections
- replace the encoder or encoder cable |

### F32912 Encoder 2: Device combination is not permissible

<table>
<thead>
<tr>
<th>Reaction:</th>
<th>ENCODER (IASC/DCBRAKE, NONE)</th>
</tr>
</thead>
<tbody>
<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. |
Faults and alarms

List of faults and alarms

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:
- For 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

Reaction: NONE
Acknowledge: NONE
Cause:
- The configuration for encoder 2 is incorrect.
  Alarm value (r2124, interpret decimal):
  1: Re-parameterization between fault/alarm is not permissible.
  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:
- For alarm value = 1:
  No re-parameterization between fault/alarm.
- For alarm value = 419:
  Reduce the fine resolution (p0419) or deactivate the monitoring (p0437.25), if the complete multiturn range is not required.

A32930 (N) Encoder 2: Data logger has saved data

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.

A32940 (F, N) Encoder 2: Spindle sensor S1 voltage incorrect

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.

F33152 (N, A)  Encoder 3: Maximum input frequency exceeded
Reaction:  ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowledge:  PULSE INHIBIT
Cause:  The maximum input frequency of the encoder evaluation has been exceeded.  
         Fault value (r0949, interpret decimal):  
         Actual input frequency in Hz.
Remedy:  
- Reduce the speed.  
- Use an encoder with a lower pulse number (p0408).

F33160 (N, A)  Encoder 3: Analog sensor channel A failed
Reaction:  ENCODER (IASC/DCBRAKE, NONE)
Acknowledge:  PULSE INHIBIT
Cause:  The input voltage of the analog sensor is outside the permissible limits.  
         Fault value (r0949, interpret decimal):  
         1: Input voltage outside detectable measuring range.  
         2: Input voltage outside the measuring range set in (p4673).  
         3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy:  
- 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).

F33161 (N, A)  Encoder 3: Analog sensor channel B failed
Reaction:  ENCODER (IASC/DCBRAKE, NONE)
Acknowledge:  PULSE INHIBIT
Cause:  The input voltage of the analog sensor is outside the permissible limits.  
         Fault value (r0949, interpret decimal):  
         1: Input voltage outside detectable measuring range.  
         2: Input voltage outside the measuring range set in (p4675).  
         3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy:  
- 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).

F33163 (N, A)  Encoder 3: Analog sensor position value exceeds limit value
Reaction:  ENCODER (IASC/DCBRAKE, NONE)
Acknowledge:  PULSE INHIBIT
Cause:  The position value has exceeded the permissible range of -0.5 ... +0.5.  
         Fault value (r0949, interpret decimal):  
         1: Position value from the LVDT sensor.  
         2: Position value from the encoder characteristic.
Remedy:  
- Check the LVDT ratio (p4678).  
- check the reference signal connection at track B.  
- check the coefficients of the characteristic (p4663 ... p4666).
A33442 (F, N) Encoder 3: Battery voltage pre-alarm

Reaction: NONE
Acknowledgment: NONE
Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer sufficient to check the multiturn information.
Remedy: Replace battery.

A33460 (N) Encoder 3: Analog sensor channel A failed

Reaction: NONE
Acknowledgment: 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).

A33461 (N) Encoder 3: Analog sensor channel B failed

Reaction: NONE
Acknowledgment: NONE
Cause: The input voltage of the analog sensor is outside the permissible limits.
Alarm value (r2124, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside the measuring range set in (p4675).
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy: Re alarm value = 1:
- check the output voltage of the analog sensor.
Re alarm value = 2:
- check the voltage setting for each encoder period (p4675).
Re alarm value = 3:
- check the range limit setting and increase it if necessary (p4676).

A33462 (N) Encoder 3: Analog sensor, no channel active

Reaction: NONE
Acknowledgment: 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).

A33463 (N) Encoder 3: Analog sensor position value exceeds limit value

Reaction: NONE
Acknowledgment: NONE
Cause: The position value has exceeded the permissible range of -0.5 ... +0.5.
Alarm value (r2124, interpret decimal):
1: Position value from the LVDT sensor.
2: Position value from the encoder characteristic.
Remedy: Re alarm value = 1:
- Check the LVDT ratio (p4678).
- check the reference signal connection at track B.
Re alarm value = 2:
- check the coefficients of the characteristic (p4663 ... p4666).
**A33470 (F, N)**  
**Encoder 3: Soiling detected**  
**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

**F33912**  
**Encoder 3: Device combination is not permissible**  
**Reaction:** ENCODER (IASC/DCBRAKE, NONE)  
**Acknowledge:** PULSE INHIBIT  
**Cause:** The selected device combination is not supported.  
Fault value (r0949, interpret decimal):  
1003:  
The connected measuring unit cannot be operated with the EnDat 2.2 converter. For instance, the measuring unit has a pulse number/resolution of 2^n.  
1005:  
The type of measuring unit (incremental) is not supported by the EnDat 2.2 converter.  
1006:  
The maximum duration (31.25 µs) of the EnDat transfer was exceeded.  
2001:  
The set combination of current controller cycle, DP cycle and Safety cycle is not supported by the EnDat 2.2 converter.  
2002:  
The resolution of the linear measuring unit does not match the pole pair width of the linear motor  
**Remedy:**  
Re fault value = 1003, 1005, 1006:  
- Use a measuring unit that is permissible.  
For fault value = 2001:  
- Set a permissible cycle combination (if required, use standard settings).  
For fault value = 2002:  
- Use a measuring unit with a lower resolution (p0422).

**A33915 (F, N)**  
**Encoder 3: Configuration error**  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The configuration for encoder 3 is incorrect.  
Alarm value (r2124, interpret decimal):  
1:  
Re-parameterization between fault/alarm is not permissible.  
419:  
When the fine resolution Gx_XIST2 is configured, the encoder identifies a maximum possible absolute position actual value (r0483) that can no longer be represented within 32 bits.  
**Remedy:**  
Re alarm value = 1:  
No re-parameterization between fault/alarm.  
Re alarm value = 419:  
Reduce the fine resolution (p0419) or deactivate the monitoring (p0437.25), if the complete multiturn range is not required.

**A33930 (N)**  
**Encoder 3: Data logger has saved data**  
**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
### Faults and alarms

#### List of faults and alarms

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.

---

<table>
<thead>
<tr>
<th>Fault Description</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A33940 (F, N) Encoder 3: Spindle sensor S1 voltage incorrect</td>
<td>NONE</td>
<td>NONE</td>
<td>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.</td>
<td>- 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.</td>
</tr>
<tr>
<td>F34950 VSM: Internal software error</td>
<td>OFF2</td>
<td>POWER ON</td>
<td>An internal software error in the Voltage Sensing Module (VSM) has occurred. Fault value (r0949, interpret decimal): Information about the fault source. Only for internal Siemens troubleshooting.</td>
<td>- If necessary, upgrade the firmware in the Voltage Sensing Module to a later version. - contact the Hotline.</td>
</tr>
<tr>
<td>F35950 TM: Internal software error</td>
<td>OFF2 (NONE)</td>
<td>POWER ON</td>
<td>An internal software error has occurred. Fault value (r0949, interpret decimal): Information about the fault source. Only for internal Siemens troubleshooting.</td>
<td>- If necessary, upgrade the firmware in the Terminal Module to a later version. - contact the Hotline.</td>
</tr>
<tr>
<td>F36950 Hub: Internal software error</td>
<td>OFF2 (NONE)</td>
<td>POWER ON</td>
<td>An internal software error has occurred. Fault value (r0949, interpret decimal): Information about the fault source. Only for internal Siemens troubleshooting.</td>
<td>- if required, upgrade the firmware in the DRIVE-CLIQ hub module to a more recent version. - contact the Hotline.</td>
</tr>
</tbody>
</table>
# Faults and alarms

## List of faults and alarms

### A50001 (F) PROFINET configuration error

**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 (p8929 = 2).  
Alarm value (r2124, interpret decimal):  
10: A/F-CPU configures mixed PZD/PROFIsafe telegram.  
13: F-CPU and PROFIsafe is not activated (p9601.3).  
15: PROFIsafe telegram of the F-CPU does not match the setting in p9501.30.  
See also: p9601 (SI enable, functions integrated in the drive (processor 1))  
**Remedy:** Check the configuration of the PROFINET controllers as well as the p8929 setting.

### A50010 (F) PROFINET Name of Station invalid

**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** PROFINET Name of Station is invalid.  
**Remedy:** Correct the name of the station (p8920) and activate (p8925 = 2).  
See also: p8920 (PN Name of Station)

### A50020 (F) PROFINET: Second controller missing

**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The PROFINET function "Shared Device" has been activated (p8929 = 2). However, only the connection to a PROFINET controller is present.  
**Remedy:** Check the configuration of the PROFINET controllers as well as the p8929 setting.

### F50510 FBLOCKS: Logon of the run-time group rejected

**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** When the run-time groups of the free function blocks attempted to log on with the sampling time management, the logon of at least one run-time group was rejected.  
Too many different hardware sampling times may have been assigned to the free function blocks.  
**Remedy:**  
- Check number of available hardware sampling times (T_sample < 8 ms) (r7903).

### F50511 FBLOCKS: Memory no longer available for free function blocks

**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** When the free function blocks were activated, more memory was requested than was available on the Control Unit.  
**Remedy:** Not necessary.

### A50513 (F) FBLOCKS: Run sequence value already assigned

**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** An attempt was made to assign a run sequence value already assigned to a function block on this drive object to another additional function block on the same drive object. A run sequence value can only be precisely assigned to one function block on one drive object.  
**Remedy:** Set another value that is still available on this drive object for the run sequence.

### A50517 FBLOCKS: Int. meas. active

**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** A Siemens internal measurement has been activated.  
**Remedy:** Carry out a POWER ON (power off/on) for the Control Unit involved.
### F50518: FBLOCKS: Sampling time of free run-time group differs at download

**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:**  
In the STARTER/SCOUT project that was downloaded, the hardware sampling time of a free run-time group (1 <= p20000[i] <= 256) was set to a value that was either too low or too high.  
The sampling time must be between 1 ms and the value r20003 - r20002.  
If the sampling time of the selected free run-time group is < 1 ms, the equivalent value of 1 ms is used.  
If the value >= r20003, then the sampling time is set to the next higher or the same software sampling time >= r21003.  
Fault value (r0949, decimal interpretation):  
Number of the p20000 index of the run-time group where the sampling time is incorrectly set.  
Number of the run-time group = fault value + 1  
Note:  
For SIMOTION D410, r20003 (unlike all the other Control Units) is automatically set the same as the PROFIBUS sampling time.  
**Remedy:**  
- correctly set the sampling time of the run-time group.  
- if required, take all of the blocks from the run-time group.  
Note:  
Fault F50518 only detects an incorrectly parameterized run-time group. If, after correcting p20000[i] in the project, this error occurs again at download, then the run-time group involved should be identified using the fault value (r0949) and the sampling time correctly set.
Appendix

Contents

<p>| | |</p>
<table>
<thead>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>A.1</td>
<td>ASCII table (excerpt)</td>
</tr>
<tr>
<td>A.2</td>
<td>Motor code list</td>
</tr>
</tbody>
</table>
A.1 ASCII table (excerpt)

The following table includes the decimal and hexadecimal notation of selected ASCII characters.

Table A-1 ASCII table (excerpt)

<table>
<thead>
<tr>
<th>Character</th>
<th>Decimal</th>
<th>Hexadecimal</th>
<th>Character</th>
<th>Decimal</th>
<th>Hexadecimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank</td>
<td>32</td>
<td>20</td>
<td>H</td>
<td>72</td>
<td>48</td>
</tr>
<tr>
<td>-</td>
<td>45</td>
<td>2D</td>
<td>I</td>
<td>73</td>
<td>49</td>
</tr>
<tr>
<td>0</td>
<td>48</td>
<td>30</td>
<td>J</td>
<td>74</td>
<td>4A</td>
</tr>
<tr>
<td>1</td>
<td>49</td>
<td>31</td>
<td>K</td>
<td>75</td>
<td>4B</td>
</tr>
<tr>
<td>2</td>
<td>50</td>
<td>32</td>
<td>L</td>
<td>76</td>
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<td>3</td>
<td>51</td>
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<td>M</td>
<td>77</td>
<td>4D</td>
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<td>4</td>
<td>52</td>
<td>34</td>
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<td>4E</td>
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<td>79</td>
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</tr>
<tr>
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<tr>
<td>C</td>
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<td>43</td>
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<td>X</td>
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</tr>
<tr>
<td>F</td>
<td>70</td>
<td>46</td>
<td>Y</td>
<td>89</td>
<td>59</td>
</tr>
<tr>
<td>G</td>
<td>71</td>
<td>47</td>
<td>Z</td>
<td>90</td>
<td>5A</td>
</tr>
</tbody>
</table>

A.2 Motor code list

Table A-2 Motor code for synchronous motors

<table>
<thead>
<tr>
<th>Order number</th>
<th>Motor type (p0300)</th>
<th>Motor code (p0301)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1LE400x-1ABxx-xxxxx</td>
<td>204</td>
<td>20401</td>
</tr>
<tr>
<td>1LE400x-1BBxx-xxxxx</td>
<td>204</td>
<td>20402</td>
</tr>
</tbody>
</table>
List of abbreviations

Abbreviations used with the SINAMICS G120:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC</td>
<td>Alternating Current</td>
</tr>
<tr>
<td>A/D</td>
<td>Analog-Digital Converter</td>
</tr>
<tr>
<td>ADR</td>
<td>Address</td>
</tr>
<tr>
<td>AFM</td>
<td>Additional Frequency Modulation</td>
</tr>
<tr>
<td>AG</td>
<td>Programmable controller</td>
</tr>
<tr>
<td>AI</td>
<td>Analog Input</td>
</tr>
<tr>
<td>AK</td>
<td>Request identifier</td>
</tr>
<tr>
<td>AO</td>
<td>Analog Output</td>
</tr>
<tr>
<td>AOP</td>
<td>Advanced Operator Panel</td>
</tr>
<tr>
<td>ASIC</td>
<td>Application-Specific Integrated Circuit</td>
</tr>
<tr>
<td>ASP</td>
<td>Analog Setpoint</td>
</tr>
<tr>
<td>ASVM</td>
<td>Asymmetric Space Vector Modulation</td>
</tr>
<tr>
<td>BCC</td>
<td>Block Check Character</td>
</tr>
<tr>
<td>BCD</td>
<td>Binary-Coded Decimal</td>
</tr>
<tr>
<td>BI</td>
<td>Binector Input</td>
</tr>
<tr>
<td>BIA</td>
<td>BG-Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>BICO</td>
<td>Binector Connector Technology</td>
</tr>
<tr>
<td>BO</td>
<td>Binector Output</td>
</tr>
<tr>
<td>BOP</td>
<td>Basic Operator Panel</td>
</tr>
<tr>
<td>C</td>
<td>Commissioning</td>
</tr>
<tr>
<td>CB</td>
<td>Communication Board</td>
</tr>
<tr>
<td>CCW</td>
<td>Counter-Clockwise</td>
</tr>
<tr>
<td>CDS</td>
<td>Command Data Set</td>
</tr>
<tr>
<td>CI</td>
<td>Connector Input</td>
</tr>
<tr>
<td>CM</td>
<td>Configuration Management</td>
</tr>
<tr>
<td>CMD</td>
<td>Command</td>
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