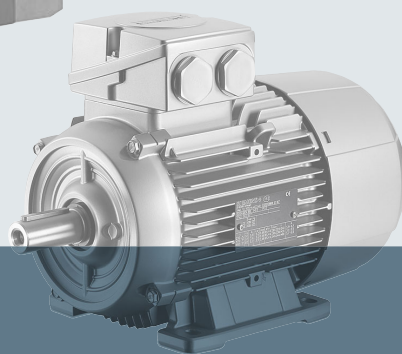


**SIEMENS**



# SINAMICS

## SINAMICS G120

Control Units CU240B-2/CU240E-2

List Manual

Edition

04/2014

Answers for industry.



# SIEMENS

## SINAMICS

### SINAMICS G120 Control Units CU240B-2/CU240E-2

#### List Manual

Fundamental safety  
instructions

1

Parameters

2

Function diagrams

3

Faults and alarms

4

Appendix

A

Index


#### Valid for


Control Units	Firmware version
CU240B-2	4.7
CU240B-2_DP	4.7
CU240E-2	4.7
CU240E-2_DP	4.7
CU240E-2_DP_F	4.7
CU240E-2_F	4.7
CU240E-2_PN	4.7
CU240E-2_PN_F	4.7


## Legal information

### Warning notice system

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

 <b>DANGER</b>
indicates that death or serious injury <b>will</b> result if proper precautions are not taken.

 <b>WARNING</b>
indicates that death or serious injury <b>could</b> result if proper precautions are not taken.

 <b>CAUTION</b>
indicates that minor personal injury can result if proper precautions are not taken.

<b>NOTICE</b>
indicates that property damage can result if proper precautions are not taken.


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

### Qualified personnel

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

### Proper Use of Siemens Products

Note the following:

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

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### Disclaimer of liability

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

# Table of contents

<b>1</b>	<b>Fundamental safety instructions</b> .....	<b>7</b>
1.1	General safety instructions .....	8
1.2	Industrial security .....	9
<b>2</b>	<b>Parameters</b> .....	<b>11</b>
2.1	Overview of parameters .....	12
2.1.1	Explanation of the parameter list .....	12
2.1.2	Number ranges of parameters .....	22
2.2	List of parameters .....	25
2.3	Parameters for data sets .....	484
2.3.1	Command Data Set (CDS) .....	484
2.3.2	Drive Data Sets (DDS) .....	486
2.3.3	Motor data sets (MDS) .....	491
2.3.4	Power unit Data Sets (PDS) .....	493
2.3.5	Encoder Data Sets (EDS) .....	493
2.4	BICO parameters (connectors/binectors) .....	494
2.4.1	Binector inputs (BI) .....	494
2.4.2	Connector inputs (CI) .....	496
2.4.3	Binector outputs (BO) .....	498
2.4.4	Connector outputs (CO) .....	499
2.4.5	Connector/binector outputs (CO/BO) .....	502
2.5	Parameters for write protection and know-how protection .....	504
2.5.1	Parameters with "WRITE_NO_LOCK" .....	504
2.5.2	Parameters with "KHP_WRITE_NO_LOCK" .....	504
2.5.3	Parameters with "KHP_ACTIVE_READ" .....	505
2.6	Quick commissioning (p0010 = 1) .....	506
<b>3</b>	<b>Function diagrams</b> .....	<b>509</b>
3.1	Table of contents .....	510
3.2	Explanation of the function diagrams .....	515
3.3	Input/output terminals .....	520
3.4	PROFenergy .....	535
3.5	PROFIdrive communication (PROFIBUS/PROFINET) .....	538
3.6	Communication, fieldbus interface (USS, MODBUS) .....	553
3.7	Internal control/status words .....	560
3.8	Brake control .....	579
3.9	Safety Integrated Basic Functions .....	581
3.10	Safety Integrated Extended Functions .....	587
3.11	Safety Integrated PROFIsafe .....	596


3.12	Setpoint channel . . . . .	599
3.13	Vector control . . . . .	610
3.14	Technology functions . . . . .	636
3.15	Free function blocks . . . . .	638
3.16	Technology controller . . . . .	659
3.17	Signals and monitoring functions . . . . .	664
3.18	Diagnostics. . . . .	675
3.19	Data sets . . . . .	681
<b>4</b>	<b>Faults and alarms . . . . .</b>	<b>685</b>
4.1	Overview of faults and alarms . . . . .	686
4.1.1	General information . . . . .	686
4.1.2	Explanation of the list of faults and alarms. . . . .	690
4.1.3	Number ranges of faults and alarms . . . . .	695
4.2	List of faults and alarms . . . . .	697
<b>A</b>	<b>Appendix . . . . .</b>	<b>813</b>
A.1	ASCII table (characters that can be displayed) . . . . .	814
A.2	Motor code list . . . . .	817
A.3	List of abbreviations . . . . .	818
	<b>Index . . . . .</b>	<b>827</b>


## Fundamental safety instructions

### Content

1.1	General safety instructions	8
1.2	Industrial security	9

## 1.1 General safety instructions

 <b>WARNING</b>
<b>Risk of death if the safety instructions and remaining risks are not carefully observed</b>
If the safety instructions and residual risks are not observed in the associated hardware documentation, accidents involving severe injuries or death can occur.
<ul style="list-style-type: none"><li>• Observe the safety instructions given in the hardware documentation.</li><li>• Consider the residual risks for the risk evaluation.</li></ul>

 <b>WARNING</b>
<b>Danger to life or malfunctions of the machine as a result of incorrect or changed parameterization</b>
As a result of incorrect or changed parameterization, machines can malfunction, which in turn can lead to injuries or death.
<ul style="list-style-type: none"><li>• Protect the parameterization (parameter assignments) against unauthorized access.</li><li>• Respond to possible malfunctions by applying suitable measures (e.g. EMERGENCY-STOP or EMERGENCY-OFF).</li></ul>



## 1.2 Industrial security

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### Note

#### Industrial security

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

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

<http://www.siemens.com/industrialsecurity>

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

<http://support.automation.siemens.com>

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### WARNING

#### Danger as a result of unsafe operating states resulting from software manipulation

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

- Keep the software up to date.

Information and newsletters can be found at:

<http://support.automation.siemens.com>

- Incorporate the automation and drive components into a holistic, state-of-the-art industrial security concept for the installation or machine.

For more information, visit:

<http://www.siemens.com/industrialsecurity>

- Make sure that you include all installed products into the holistic industrial security concept.



# Parameters

# 2

## Content

2.1	Overview of parameters	12
2.2	List of parameters	25
2.3	Parameters for data sets	484
2.4	BICO parameters (connectors/binectors)	494
2.5	Parameters for write protection and know-how protection	504
2.6	Quick commissioning (p0010 = 1)	506

## 2.1 Overview of parameters




### 2.1.1 Explanation of the parameter list

#### Basic structure of the parameter descriptions

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

The "List of parameters" (Page 25) has the following structure:

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

<b>pxxxx[0...n]</b>	<b>BICO: Full parameter name / abbreviated name</b>			
<b>CU/PM variants</b>	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32	
	<b>Can be changed:</b> C(x), U, T	<b>Scaling:</b> p2002	<b>Dyn. index:</b> CDS, p0170	
	<b>Unit group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8070	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0.00 [Nm]	10.00 [Nm]	0.00 [Nm]	
<b>Description:</b>	Text			
<b>Value:</b>	0: Name and meaning of value 0 1: Name and meaning of value 1 2: Name and meaning of value 2 etc.			
<b>Recommendation:</b>	Text			
<b>Index:</b>	[0] = Name and meaning of index 0 [1] = Name and meaning of index 1 [2] = Name and meaning of index 2 etc.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	Name and meaning of bit 0	Yes	no
	01	Name and meaning of bit 1	Yes	no
	02	Name and meaning of bit 2 etc.	Yes	no
				<b>FP</b>
				8060
				-
				8052
<b>Dependency:</b>	Text Refer to: pxxxx, rxxxx Refer to: Fxxxxx, Axxxxx			
<b>Danger:</b>	<b>Warning:</b>	<b>Caution:</b>	Safety notices with a warning triangle	
				
<b>Notice:</b>	Safety notice without a warning triangle			
<b>Note:</b>	Information that might be useful.			

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

The individual pieces of information are described in detail below.

**pxxxx[0...n]      Parameter number**

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

Examples of the representation in the parameter list:

- p...                      Adjustable parameters (read and write parameters)
- r...                      Display parameters (read only)
- p0918                    Adjustable parameter 918
- p2051[0...13]        Adjustable parameter 2051, indices 0 to 13
- p1001[0...n]        Adjustable parameter 1001, indices 0 to n (n = configurable)
- r0944                    Display parameter 944
- r2129.0...15        Display parameter 2129 with bit field from bit 0 (smallest bit) to bit 15 (largest bit)

Other examples of the notation in the documentation:

- p1070[1]              Adjustable parameter 1070, index 1
- p2098[1].3          Adjustable parameter 2098, index 1 bit 3
- p0795.4              Adjustable parameter 795, bit 4

The following applies to adjustable parameters:

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

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

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

- Setting the PROFIBUS telegram (BICO interconnection)  
p0922
- Set component lists  
p0230, p0300, p0301, p0400
- Automatic calculation and pre-assignment  
p0340, p3900
- Restoring the factory settings  
p0970

The following applies to display parameters:

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

**Note**

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

**BICO: Full parameter name / abbreviated name**

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

- **BI:** Binector Input  
This parameter is used for selecting the source of a digital signal.
- **BO:** Binector output  
This parameter is available as a digital signal for interconnection with other parameters.
- **CI:** Connector Input  
This parameter is used for selecting the source of an "analog" signal.
- **CO:** Connector output  
This parameter is available as an "analog" signal for interconnection with other parameters.
- **CO/BO:** Connector/Binector Output  
This parameter is available as an "analog" and digital signal for interconnection with other parameters.

**Note**

A BICO input (BI/CI) cannot be interconnected with just any BICO output (BO/CO, signal source).

When interconnecting a BICO input using the commissioning software, only the corresponding possible signal sources are listed.

Function diagrams 1020 ... 1030 explain the symbols for BICO parameters and how to deal with BICO technology.

**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.

The following information relating to "CU" and "PM" can be displayed under the parameter number:

Table 2-1 Information in the "CU/PM variants" field

CU/PM variants	Meaning
	All Control Units have this parameter.
CU240B-2	CU240B-2
CU240B-2_DP	CU240B-2 with PROFIBUS interface
CU240E-2	CU240E-2
CU240E-2_DP	CU240E-2 with PROFIBUS interface
CU240E-2_DP_F	CU240E-2 with PROFIBUS interface and extended integrated safety functions
CU240E-2_F	CU240E-2 with extended integrated safety functions
CU240E-2_PN	CU240E-2 with PROFINET interface
CU240E-2_PN_F	CU240E-2 with PROFINET interface and extended integrated safety functions

Table 2-1 Information in the "CU/PM variants" field, continued

CU/PM variants	Meaning
PM230	Power Module for pumps and fans (3 AC 400 V)
PM240	Power Module for standard applications with dynamic braking (3 AC 400 V)
PM250	Power Module (3 AC 400 V with energy recovery)
PM260	Power Module (3 AC 690 V with energy recovery)

### Access level

Specifies the minimum access level required to be able to display and change the relevant parameter. The required access level can be set using p0003.

The system uses the following access levels:

- 1: Standard (not adjustable, included in p0003 = 3)
- 2: Extended (not adjustable, included in p0003 = 3)
- 3: Expert
- 4: Service

Parameters with this access level are password protected.

---

#### Note

Parameter p0003 is CU-specific (belongs to the Control Unit).

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

---

### 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.

**Data type**

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

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

Parameters can have the following data types:

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

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

Table 2-2 Possible combinations of BICO interconnections

BICO output parameter	BICO input parameter			
	CI parameter			BI parameter
	Unsigned32 / Integer16	Unsigned32 / Integer32	Unsigned32 / FloatingPoint32	Unsigned32 / Binary
CO: Unsigned8	x	x	–	–
CO: Unsigned16	x	x	–	–
CO: Unsigned32	x	x	–	–
CO: Integer16	x	x	r2050	–
CO: Integer32	x	x	r2060	–
CO: FloatingPoint32	x	x	x	–
BO: Unsigned8	–	–	–	x
BO: Unsigned16	–	–	–	x
BO: Unsigned32	–	–	–	x
BO: Integer16	–	–	–	x
BO: Integer32	–	–	–	x
BO: FloatingPoint32	–	–	–	–
Legend:                    x : BICO interconnection permitted –: BICO interconnection not permitted rxxxx: BICO interconnection is only permitted for the specified CO parameters				



## Can be changed

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

The information "C(x), T, U" ((x): optional) means that the parameter can be changed only in the specified drive unit state and that the change will not take effect until the unit switches to another state. This can be a single state or multiple states.

The following states are available:

- C(x) commissioning C: Commissioning  
 Drive commissioning is in progress (p0010 > 0).  
 Pulses cannot be enabled.  
 The parameter can only be changed in the following drive commissioning settings (p0010 > 0):
  - C: Can be changed for all settings p0010 > 0.
  - C(x): Can only be changed for the settings p0010 = x.
 A modified parameter value does not take effect until drive commissioning mode is exited with p0010 = 0.
- U Operation U: Run  
 Pulses are enabled.
- T Ready T: Ready to run  
 The pulses are not enabled and the status "C(x)" is not active.

## Scaling

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

The following reference variables are available:

- p2000 ... p2006: Reference speed, reference voltage, etc.
- PERCENT: 1.0 = 100 %
- 4000H: 4000 hex = 100 %

**Dyn. index (dynamic index)**

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

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

The following information can be contained in this field:

- "CDS, p0170" (Command Data Set, CDS count)

Example:

p1070[0] → main setpoint [command data set 0]

p1070[1] → main setpoint [command data set 1], etc.

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

Data sets can only be created and deleted when p0010 = 15.

**Note**

Information on the data sets can be taken from the following references:

Operating Instructions SINAMICS G120 Frequency Converter with CU240B-2 and CU240E-2 Control Units.

**Unit group and unit selection**

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

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

**Example:**

Unit group: 7\_1, unit selection: p0505

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

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

Table 2-3 Unit group (p0100)

Unit group	Unit selection for p0100 =			Reference variable for %
	0	1	2	
7_4	Nm	lbf ft	Nm	-
14_6	kW	hp	kW	-
25_1	kg m <sup>2</sup>	lb ft <sup>2</sup>	kg m <sup>2</sup>	-
27_1	kg	lb	kg	-
28_1	Nm/A	lbf ft/A	Nm/A	-

Table 2-4 Unit group (p0505)

Unit group	Unit selection for p0505 =				Reference variable for %
	1	2	3	4	
2_1	Hz	%	Hz	%	p2000
3_1	1 rpm	%	1 rpm	%	p2000
5_1	Vrms	%	Vrms	%	p2001
5_2	V	%	V	%	p2001
5_3	V	%	V	%	p2001
6_2	Arms	%	Arms	%	p2002
6_5	A	%	A	%	p2002
7_1	Nm	%	lbf ft	%	p2003
7_2	Nm	Nm	lbf ft	lbf ft	-
14_5	kW	%	hp	%	r2004
14_10	kW	kW	hp	hp	-
21_1	°C	°C	°F	°F	-
21_2	K	K	°F	°F	-
39_1	1/s <sup>2</sup>	%	1/s <sup>2</sup>	%	p2007

Table 2-5 Unit group (p0595)

Unit group	Unit selection for p0595 =		Reference variable for %
	Value	Unit	
9_1	The values that can be set and the technological units are shown in p0595.		

## Function diagram

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

#### Parameter values

Min	Minimum value of the parameter [unit]
Max	Maximum value of the parameter [unit]
Factory setting	Value when delivered [unit]  In the case of a binector/connector input, the signal source of the default BICO interconnection is specified. A non-indexed connector output is assigned the index [0].  A different value may be displayed for certain parameters (e.g. p1800) at the initial commissioning stage or when establishing the factory settings. Reason: The setting of these parameters is determined by the operating environment of the Control Unit (e.g. depending on converter type, power unit).

#### Description

Explanation of the function of a parameter

#### Values

Lists the possible values of a parameter.

#### Recommendation

Information about recommended settings.

#### Index

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

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

- Min, Max:  
The adjustment range and unit apply to all indices.
- Factory setting:  
When all indices have the same factory setting, index 0 is specified with the unit to represent all indices.  
When the indices have different factory settings, they are all listed individually with the unit.

## Bit field

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

- Bit number and signal name
- Meaning for signal states 1 and 0
- Function diagram (FP) (optional).

The signal is shown in 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.

Where necessary, "Refer to:" indicates the following information:

- List of other relevant parameters to be considered.
- List of faults and alarms to be considered.

## Safety guidelines

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

Information that must be observed to avoid any problems.

Information that the user may find useful.

### Danger



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

### Warning



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

### Caution



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

### Notice

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

### Note

Information that the user may find useful.

## 2.1.2 Number ranges of parameters

### Note

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

The parameters for the product described in this List Manual are described in detail in "List of parameters" (Page 25).

Parameters are grouped into the following number ranges:

Table 2-6 Number ranges for SINAMICS

Range		Description
From	To	
0000	0099	Display and operation
0100	0199	Commissioning
0200	0299	Power section
0300	0399	Motor
0400	0499	Encoder
0500	0599	Technology and units, motor-specific data, probes
0600	0699	Thermal monitoring, maximum current, operating hours, motor data, central probe
0700	0799	Control Unit terminals, measuring sockets
0800	0839	CDS, DDS data sets, motor changeover
0840	0879	Sequence control (e.g. signal source for ON/OFF1)
0880	0899	ESR, parking, control and status words
0900	0999	PROFIBUS/PROFIdrive
1000	1199	Setpoint channel (e.g. ramp-function generator)
1200	1299	Functions (e.g. motor holding brake)
1300	1399	U/f control
1400	1799	Closed-loop control
1800	1899	Gating unit
1900	1999	Power unit and motor identification
2000	2009	Reference values
2010	2099	Communication (fieldbus)
2100	2139	Faults and alarms
2140	2199	Signals and monitoring
2200	2359	Technology controller
2360	2399	Staging, hibernation
2500	2699	Position control (LR) and basic positioning (EPOS)
2700	2719	Reference values, display

Table 2-6 Number ranges for SINAMICS, continued

Range		Description
From	To	
2720	2729	Load gearbox
2800	2819	Logic operations
2900	2930	Fixed values (e. g. percentage, torque)
3000	3099	Motor identification results
3100	3109	Real-time clock (RTC)
3110	3199	Faults and alarms
3200	3299	Signals and monitoring
3400	3659	Infeed closed-loop control
3660	3699	Voltage Sensing Module (VSM), Braking Module internal
3700	3779	Advanced Positioning Control (APC)
3780	3819	Synchronization
3820	3849	Friction characteristic
3850	3899	Functions (e. g. long stator)
3900	3999	Management
4000	4599	Terminal Board, Terminal Module (e. g. TB30, TM31)
4600	4699	Sensor Module
4700	4799	Trace
4800	4849	Function generator
4950	4999	OA application
5000	5169	Spindle diagnostics
5200	5230	Current setpoint filter 5 ... 10 (r0108.21)
5400	5499	System droop control (e. g. shaft generator)
5500	5599	Dynamic grid support (solar)
5600	5614	PROFenergy
5900	6999	SINAMICS GM/SM/GL/SL
7000	7499	Parallel connection of power units
7500	7599	SINAMICS SM120
7700	7729	External messages
7770	7789	NVRAM, system parameters
7800	7839	EEPROM read/write parameters
7840	8399	Internal system parameters
8400	8449	Real-time clock (RTC)
8500	8599	Data and macro management
8600	8799	CAN bus
8800	8899	Communication Board Ethernet (CBE), PROFIdrive

Table 2-6 Number ranges for SINAMICS, continued

Range		Description
From	To	
8900	8999	Industrial Ethernet, PROFINET, CBE20
9000	9299	topology
9300	9399	Safety Integrated
9400	9499	Parameter consistency and storage
9500	9899	Safety Integrated
9900	9949	topology
9950	9999	Diagnostics, internal
10000	10199	Safety Integrated
11000	11299	Free technology controller 0, 1, 2
20000	20999	Free function blocks (FBLOCKS)
21000	25999	Drive Control Chart (DCC)
50000	53999	SINAMICS DC MASTER (closed-loop DC current control)
61000	61001	PROFINET



## 2.2 List of parameters

Product: SINAMICS G120 CU240, Version: 4702900, Language: eng  
 Objects: CU240B-2, CU240B-2\_DP, CU240E-2, CU240E-2\_DP, CU240E-2\_DP\_F, CU240E-2\_F, CU240E-2\_PN\_F, CU240E-2\_PN

<b>r0002</b>	<b>Drive operating display / Drv op_display</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	200	-
<b>Description:</b>	Operating display for the drive.		
<b>Value:</b>	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 15: Operation - open brake (p1215) 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 - DC 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		
<b>Dependency:</b>	Refer to: r0046		
<b>Notice:</b>	For several missing enable signals, the corresponding value with the highest number is displayed.		
<b>Note:</b>	OC: Operating condition RFG: Ramp-function generator COMM: Commissioning MotID: Motor data identification		
<b>p0003</b>	<b>Access level / Acc_level</b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C, U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	3	4	3
<b>Description:</b>	Sets the access level to read and write parameters.		
<b>Value:</b>	3: Expert 4: Service		
<b>Note:</b>	A higher set access level also includes the lower one. 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).		

## 2 Parameters

### 2.2 List of parameters

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<b>p0010</b>	<b>Drive commissioning parameter filter / Drv comm. par_filt</b>		
CU240B-2	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240B-2_DP	<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2800, 2818
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	49	1
<b>Description:</b>	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.		
<b>Value:</b>	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		
<b>Dependency:</b>	Refer to: r3996		
<b>Notice:</b>	When the parameter is reset to a value of 0, short-term communication interruptions may occur.		
<b>Note:</b>	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!		

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<b>p0010</b>	<b>Drive commissioning parameter filter / Drv comm. par_filt</b>		
PM230	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2	<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2800, 2818
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	49	1
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	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.		
<b>Value:</b>	0: Ready 1: Quick commissioning 2: Power unit commissioning 3: Motor commissioning 5: Technological application/units 11: Function modules 15: Data sets 29: Only Siemens int 30: Parameter reset 39: Only Siemens int 49: Only Siemens int		
<b>Dependency:</b>	Refer to: r3996		
<b>Notice:</b>	When the parameter is reset to a value of 0, short-term communication interruptions may occur.		
<b>Note:</b>	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!

<b>p0010</b>	<b>Drive commissioning parameter filter / Drv comm. par_filt</b>		
PM240	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2800, 2818
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	0	95	1
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	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.		
<b>Value:</b>	0: Ready 1: Quick commissioning 2: Power unit commissioning 3: Motor commissioning 5: Technological application/units 11: Function modules 15: Data sets 29: Only Siemens int 30: Parameter reset 39: Only Siemens int 49: Only Siemens int 95: Safety Integrated commissioning		
<b>Dependency:</b>	Refer to: r3996		
<b>Notice:</b>	When the parameter is reset to a value of 0, short-term communication interruptions may occur.		
<b>Note:</b>	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!		

<b>p0014</b>	<b>Buffer memory mode / Buf mem mode</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	2	0
<b>Description:</b>	Sets the mode for the buffer memory.		
<b>Value:</b>	0: Save in a non-volatile fashion (RAM) 1: Buffer memory active (non-volatile) 2: Clear buffer memory		
<b>Dependency:</b>	If p0014 = 1, changes in the same parameter, as well as in following parameters will not be copied to the buffer memory: Refer to: p0040, p0340, p0650, p0802, p0803, p0804, p0952, p0969, p0970, p0971, p0972, p1900, p1910, p1960, p2111, p3900, p3981		

## 2 Parameters

### 2.2 List of parameters

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

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<b>p0015</b>	<b>Macro drive unit / Macro drv unit</b>		
CU240B-2_DP	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2_DP	<b>Can be changed:</b> C, C(1)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	0	999999	7

- Description:** Runs the corresponding macro files.
- 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.  
When executing a specific macro, the corresponding programmed settings are made and become active.
- Note:** Macros available as standard are described in the technical documentation of the particular product.

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<b>p0015</b>	<b>Macro drive unit / Macro drv unit</b>		
CU240B-2	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2	<b>Can be changed:</b> C, C(1)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	999999	12

- Description:** Runs the corresponding macro files.
- 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.  
When executing a specific macro, the corresponding programmed settings are made and become active.
- Note:** Macros available as standard are described in the technical documentation of the particular product.

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<b>r0018</b>	<b>Control Unit firmware version / CU FW version</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	4294967295	-

- 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.

---

<b>r0020</b>	<b>Speed setpoint smoothed / n_set smth</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 5020, 6799
	<b>Min</b> - [rpm]	<b>Max</b> - [rpm]	<b>Factory setting</b> - [rpm]
<b>Description:</b>	Displays the currently smoothed speed setpoint at the input of the speed controller or U/f characteristic (after the interpolator).		
<b>Dependency:</b>	Refer to: r0060		
<b>Note:</b>	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).		

---

<b>r0021</b>	<b>CO: Actual speed smoothed / n_act smooth</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6799
	<b>Min</b> - [rpm]	<b>Max</b> - [rpm]	<b>Factory setting</b> - [rpm]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: r0022, r0063		
<b>Note:</b>	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.		

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<b>r0022</b>	<b>Speed actual value rpm smoothed / n_act rpm smooth</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6799
	<b>Min</b> - [rpm]	<b>Max</b> - [rpm]	<b>Factory setting</b> - [rpm]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: r0021, r0063		
<b>Note:</b>	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.		

<b>r0024</b>	<b>Output frequency smoothed / f_outp smooth</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 5300, 5730, 6300, 6799
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Hz]	- [Hz]	- [Hz]
<b>Description:</b>	Displays the smoothed converter frequency.		
<b>Dependency:</b>	Refer to: r0066		
<b>Note:</b>	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).		
<b>r0025</b>	<b>CO: Output voltage smoothed / U_outp smooth</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 5730, 6300, 6799
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Displays the smoothed output voltage of the power unit.		
<b>Dependency:</b>	Refer to: r0072		
<b>Note:</b>	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).		
<b>r0026</b>	<b>CO: DC link voltage smoothed / Vdc smooth</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6799
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [V]	- [V]	- [V]
<b>Description:</b>	Displays the smoothed actual value of the DC link voltage.		
<b>Dependency:</b>	Refer to: r0070		
<b>Notice:</b>	When measuring a DC link voltage < 200 V, for the Power Module 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.		
<b>Note:</b>	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.		
<b>r0027</b>	<b>CO: Absolute actual current smoothed / I_act abs val smth</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 5730, 6799, 8850, 8950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Displays the smoothed absolute actual current value.		
<b>Dependency:</b>	Refer to: r0068		
<b>Notice:</b>	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**

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 5730, 6799, 8950
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [%]	- [%]	- [%]

**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**

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6799
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [Arms]	- [Arms]	- [Arms]

**Description:** Displays the smoothed field-generating actual current.  
**Dependency:** Refer to: r0076  
**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**

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6799
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [Arms]	- [Arms]	- [Arms]

**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**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -
<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 5730, 6799
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [Nm]	- [Nm]	- [Nm]

**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 torque actual value is available smoothed (r0031) and unsmoothed (r0080).

<b>r0032</b>	<b>CO: Active power actual value smoothed / P_actv_act smth</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> r2004	<b>Dyn. index:</b> -
	<b>Units group:</b> 14_10	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 5730, 6799, 8750, 8850, 8950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [kW]	- [kW]	- [kW]
<b>Description:</b>	Displays the smoothed actual value of the active power.		
<b>Dependency:</b>	Refer to: r0082		
<b>Notice:</b>	This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.		
<b>Note:</b>	Power delivered at the motor shaft. The active power is available smoothed (r0032 with 100 ms) and unsmoothed (r0082).		
<b>r0033</b>	<b>Torque utilization smoothed / M_util smooth</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8012
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	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.		
<b>Dependency:</b>	This parameter is only available for vector control. For U/f control r0033 = 0 %.		
<b>Note:</b>	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 % For the actual torque limit < 0, the following applies: r0033 = 0 %		
<b>r0034</b>	<b>CO: Motor utilization thermal / Mot_util therm</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Displays the motor utilization from motor temperature model 1 (I2t).		
<b>Dependency:</b>	The thermal motor utilization is only determined for permanent-magnet synchronous motors when the motor temperature model 1 (I2t) is activated. For motor temperature model 1 (I2t) (p0612.0 = 1), the following applies: - r0034 = (motor model temperature - 40 K) / (p0605 - 40 K) * 100 % Refer to: p0611, p0612, p0615		
<b>Notice:</b>	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.		
<b>Note:</b>	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).		



<b>r0035</b>	<b>CO: Motor temperature / Mot temp</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2006	<b>Dyn. index:</b> -
	<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8016, 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [°C]	- [°C]	- [°C]
<b>Description:</b>	Display and connector output for the actual temperature in the motor.		
<b>Note:</b>	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).		
<b>r0036</b>	<b>CO: Power unit overload I2t / PU overload I2t</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8014
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Displays the power unit overload determined using the I2t calculation. A current reference value is defined for the I2t monitoring of the power unit. It represents the current that can be conducted by the power unit without any influence of the switching losses (e.g. the continuously permissible current of the capacitors, inductances, busbars, etc.). If the I2t reference current of the power unit is not exceeded, then an overload (0 %) is not displayed. In the other case, the degree of thermal overload is calculated, whereby 100% results in a trip.		
<b>Dependency:</b>	Refer to: p0290, p0294		
<b>r0037[0...19]</b>	<b>CO: Power unit temperatures / PU temperatures</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2006	<b>Dyn. index:</b> -
	<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8014
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [°C]	- [°C]	- [°C]
<b>Description:</b>	Display and connector output for the temperature in the power unit.		
<b>Index:</b>	[0] = Inverter maximum value [1] = Depletion layer maximum value [2] = Rectifier maximum value [3] = Air intake [4] = Interior of power unit [5] = Inverter 1 [6] = Inverter 2 [7...10] = Reserved [11] = Rectifier 1 [12] = Reserved [13] = Depletion layer 1 [14] = Depletion layer 2 [15] = Depletion layer 3 [16] = Depletion layer 4 [17] = Depletion layer 5 [18] = Depletion layer 6 [19] = Reserved		
<b>Notice:</b>	Only for internal Siemens troubleshooting.		

## 2 Parameters

### 2.2 List of parameters

**Note:** The value of -200 indicates that there is no measuring signal.  
r0037[0]: Maximum value of the inverter temperatures (r0037[5...10]).  
r0037[1]: Maximum value of the depletion layer temperatures (r0037[13...18]).  
r0037[2]: Maximum value of the rectifier temperatures (r0037[11...12]).  
The maximum value is the temperature of the hottest inverter, depletion layer, or rectifier.  
r0037[2, 3, 6, 11, 14...18] is only relevant for chassis power units.  
In the case of a fault, the particular shutdown threshold depends on the power unit, and cannot be read out.

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<b>r0038</b>	<b>Power factor smoothed / Cos phi smooth</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6799, 8850, 8950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the smoothed actual power factor. This refers to the electrical power of the basic fundamental signals at the converter output terminals.		
<b>Notice:</b>	For infeed units, the following applies: For active powers < 25 % of the rated power, this does not provide any useful information.		
<b>Note:</b>	Smoothing time constant = 300 ms The signal is not suitable as a process quantity and may only be used as a display quantity.		

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<b>r0039[0...2]</b>	<b>Energy display / Energy displ</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [kWh]	- [kWh]	- [kWh]
<b>Description:</b>	Displays the energy values at the output terminals of the power unit.		
<b>Index:</b>	[0] = Energy balance (sum) [1] = Energy drawn [2] = Energy fed back		
<b>Dependency:</b>	Refer to: p0040		
<b>Note:</b>	Re index 0: Sum of the energy drawn and energy that is fed back.		

---

<b>p0040</b>	<b>Reset energy consumption display / Energy usage reset</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: r0039		

---

<b>r0041</b>	<b>Energy consumption saved / Energy cons saved</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [kWh]	- [kWh]	- [kWh]
<b>Description:</b>	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.

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**p0045**      **Display values smoothing time constant / Disp\_val T\_smooth**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6714, 8012
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.00 [ms]	10000.00 [ms]	4.00 [ms]

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

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**r0046.0...31**      **CO/BO: Missing enable sig / Missing enable sig**

CU240B-2	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240B-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2634
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

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

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	OFF1 enable missing	Yes	No	7954
	01	OFF2 enable missing	Yes	No	-
	02	OFF3 enable missing	Yes	No	-
	03	Operation enable missing	Yes	No	-
	04	DC braking enable missing	Yes	No	-
	10	Ramp-function generator enable missing	Yes	No	-
	11	Ramp-function generator start missing	Yes	No	-
	12	Setpoint enable missing	Yes	No	-
	16	OFF1 enable internal missing	Yes	No	-
	17	OFF2 enable internal missing	Yes	No	-
	18	OFF3 enable internal missing	Yes	No	-
	19	Pulse enable internal missing	Yes	No	-
	20	DC braking internal enable missing	Yes	No	-
	21	Power unit enable missing	Yes	No	-
	26	Drive inactive or not operational	Yes	No	-
	27	De-magnetizing not completed	Yes	No	-
	28	Brake open missing	Yes	No	-
	30	Speed controller inhibited	Yes	No	-
	31	Jog setpoint active	Yes	No	-

**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 brake active) when:  
 - the signal source in p1230 has a 1 signal  
 Bit 08 = 1 (enable signal missing), if:  
 - safety functions have been enabled and STO is active.

## 2 Parameters

### 2.2 List of parameters

STO selected via onboard terminals:

- the pulse enable via fail-safe digital inputs is missing.

STO selected via PROFIsafe:

- A safety-relevant signal is present with a STOP A response.

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.
- The hibernation mode 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.

#### r0046.0...31

#### CO/BO: Missing enable sig / Missing enable sig

CU240E-2	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2634
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	-	-	-
CU240E-2 PN			

#### Description:

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

#### Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	OFF1 enable missing	Yes	No	7954
01	OFF2 enable missing	Yes	No	-
02	OFF3 enable missing	Yes	No	-
03	Operation enable missing	Yes	No	-

04	DC braking enable missing	Yes	No	-
08	Safety enable missing	Yes	No	-
10	Ramp-function generator enable missing	Yes	No	-
11	Ramp-function generator start missing	Yes	No	-
12	Setpoint enable missing	Yes	No	-
16	OFF1 enable internal missing	Yes	No	-
17	OFF2 enable internal missing	Yes	No	-
18	OFF3 enable internal missing	Yes	No	-
19	Pulse enable internal missing	Yes	No	-
20	DC braking internal enable missing	Yes	No	-
21	Power unit enable missing	Yes	No	-
26	Drive inactive or not operational	Yes	No	-
27	De-magnetizing not completed	Yes	No	-
28	Brake open missing	Yes	No	-
30	Speed controller inhibited	Yes	No	-
31	Jog setpoint active	Yes	No	-

**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 brake active) when:

- the signal source in p1230 has a 1 signal

Bit 08 = 1 (enable signal missing), if:

- safety functions have been enabled and STO is active.

STO selected via onboard terminals:

- the pulse enable via fail-safe digital inputs is missing.

STO selected via PROFIsafe:

- A safety-relevant signal is present with a STOP A response.

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).

## 2 Parameters

### 2.2 List of parameters

- 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.
  - The hibernation mode 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

<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	300	-

**Description:** Displays the actual status for the motor data identification (stationary measurement) and the speed 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

---

#### r0050.0...1 CO/BO: Command Data Set CDS effective / CDS effective

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8560
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

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

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	CDS eff bit 0	ON	OFF	-
	01	CDS eff bit 1	ON	OFF	-

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

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

---

<b>r0051.0...1</b>	<b>CO/BO: Drive Data Set DDS effective / DDS effective</b>				
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8565		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the effective Drive Data Set (DDS).				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	DDS eff bit 0	ON	OFF	-
	01	DDS eff bit 1	ON	OFF	-
<b>Dependency:</b>	Refer to: p0820, p0821, r0837				
<b>Note:</b>	When selecting the motor data identification routine and the rotating measurement, the drive data set changeover is suppressed.				

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<b>r0052.0...15</b>	<b>CO/BO: Status word 1 / ZSW 1</b>				
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Display and connector output for status word 1.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Rdy for switch on	Yes	No	-
	01	Ready	Yes	No	-
	02	Operation enabled	Yes	No	-
	03	Fault present	Yes	No	-
	04	Coast down active (OFF2)	No	Yes	-
	05	Quick Stop active (OFF3)	No	Yes	-
	06	Switching on inhibited active	Yes	No	-
	07	Alarm present	Yes	No	-
	08	Deviation setpoint/actual speed	No	Yes	-
	09	Control request	Yes	No	-
	10	Maximum speed reached	Yes	No	-
	11	I, M, P limit reached	No	Yes	-
	12	Motor holding brake open	Yes	No	-
	13	Alarm motor overtemperature	No	Yes	-
	14	Motor rotates forwards	Yes	No	-
	15	Alarm drive converter overload	No	Yes	-
<b>Notice:</b>	p2080 is used to define the signal sources of the PROFIdrive status word interconnection.				
<b>Note:</b>	Re bit 03: This signal is inverted if it is interconnected to a digital output. Re r0052: The status bits have the following sources: Bit 00: r0899 Bit 0 Bit 01: r0899 Bit 1 Bit 02: r0899 Bit 2 Bit 03: r2139 Bit 3 (or r1214.10 for 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				

## 2 Parameters

### 2.2 List of parameters

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:** -                      **Dyn. index:** -  
**Units group:** -                      **Unit selection:** -                      **Func. diagram:** -  
**Min**                                      **Max**                                      **Factory setting**  
 -    -    -

**Description:**

Display and BICO output for status word 2.

**Bit field:**

Bit	Signal name	1 signal	0 signal	FP
00	DC braking active	Yes	No	-
01	n_act  > p1226 (n_standstill)	Yes	No	-
02	n_act  > p1080 (n_min)	Yes	No	-
03	_act  >= p2170	Yes	No	-
04	n_act  > p2155	Yes	No	-
05	n_act  <= p2155	Yes	No	-
06	n_act  >= r1119 (n_set)	Yes	No	-
07	Vdc <= p2172	Yes	No	-
08	Vdc > p2172	Yes	No	-
09	Ramp-up/ramp-down completed	Yes	No	-
10	Technology controller output at the lower limit	Yes	No	-
11	Technology controller output at the upper limit	Yes	No	-

**Notice:**

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

**Access level:** 2                      **Calculated:** -                      **Data type:** Unsigned16  
**Can be changed:** -                      **Scaling:** -                      **Dyn. index:** -  
**Units group:** -                      **Unit selection:** -                      **Func. diagram:** -  
**Min**                                      **Max**                                      **Factory setting**  
 -    -    -

**Description:**

Displays control word 1.

**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	Acknowledge fault	Yes	No	-



08	Jog bit 0	Yes	No	3030
09	Jog bit 1	Yes	No	3030
10	Master ctrl by PLC	Yes	No	-
11	Direction reversal (setpoint)	Yes	No	-
13	Motorized potentiometer raise	Yes	No	-
14	Motorized potentiometer lower	Yes	No	-
15	CDS bit 0	Yes	No	-

**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

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

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2513
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Display and BICO output for supplementary control word.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Fixed setp bit 0	Yes	No	-
	01	Fixed setp bit 1	Yes	No	-
	02	Fixed setp bit 2	Yes	No	-
	03	Fixed setp bit 3	Yes	No	-
	04	DDS select. bit 0	Yes	No	-
	05	DDS select. bit 1	Yes	No	-
	08	Technology controller enable	Yes	No	-
	09	DC braking enable	Yes	No	-
	11	Droop enable	Yes	No	-
	12	Torque control active	Yes	No	-
	13	External fault 1 (F07860)	No	Yes	-
	15	CDS bit 1	Yes	No	-

**Note:** CDS: Command Data Set  
 DDS: Drive Data Set (DDS)  
 The following control bits are displayed in r0055:

Bit 00: r1198.0  
 Bit 01: r1198.1  
 Bit 02: r1198.2  
 Bit 03: r1198.3  
 Bit 04: r0837.0  
 Bit 05: r0837.1  
 Bit 08: r2349.0 (negated)  
 Bit 09: r1239.11  
 Bit 11: r1406.11

## 2 Parameters

### 2.2 List of parameters

Bit 12: r1406.12  
 Bit 13: r2138.13 (negated)  
 Bit 15: r0836.1

#### r0056.0...15

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

PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
PM240	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

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

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Initialization completed	Yes	No	-
	01	De-magnetizing completed	Yes	No	-
	02	Pulse enable available	Yes	No	-
	03	Soft starting present	Yes	No	-
	04	Magnetizing completed	Yes	No	-
	05	Voltage boost when starting	Active	Inactive	6301
	06	Acceleration voltage	Active	Inactive	6301
	07	Frequency negative	Yes	No	-
	08	Field weakening active	Yes	No	-
	09	Voltage limit active	Yes	No	6714
	10	Slip limit active	Yes	No	6310
	11	Frequency limit active	Yes	No	-
	12	Current limiting controller voltage output active	Yes	No	-
	13	Current/torque limiting	Active	Inactive	6060
	14	Vdc_max controller active	Yes	No	6220, 6320
	15	Vdc_min controller active	Yes	No	6220, 6320

#### r0056.0...13

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

PM250	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
PM260	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

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

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Initialization completed	Yes	No	-
	01	De-magnetizing completed	Yes	No	-
	02	Pulse enable available	Yes	No	-
	03	Soft starting present	Yes	No	-
	04	Magnetizing completed	Yes	No	-
	05	Voltage boost when starting	Active	Inactive	6301
	06	Acceleration voltage	Active	Inactive	6301
	07	Frequency negative	Yes	No	-
	08	Field weakening active	Yes	No	-
	09	Voltage limit active	Yes	No	6714
	10	Slip limit active	Yes	No	6310
	11	Frequency limit active	Yes	No	-
	12	Current limiting controller voltage output active	Yes	No	-
	13	Current/torque limiting	Active	Inactive	6060

---

<b>r0060</b>	<b>CO: Speed setpoint before the setpoint filter / n_set before filt.</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 2701, 2704, 5020, 6030, 6799
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	Displays the actual speed setpoint at the input of the speed controller or U/f characteristic (after the interpolator).		
<b>Dependency:</b>	Refer to: r0020		
<b>Note:</b>	The speed setpoint is available smoothed (r0020) and unsmoothed (r0060).		

---

<b>r0062</b>	<b>CO: Speed setpoint after the filter / n_set after filter</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6020, 6030, 6031
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	Display and connector output for the speed setpoint after the setpoint filters.		

---

<b>r0063[0...2]</b>	<b>CO: Speed actual value / n_act</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6020, 6799
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	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].		
<b>Index:</b>	[0] = Unsmoothed [1] = Smoothed with p0045 [2] = Calculated from f_set - f_slip		
<b>Dependency:</b>	Refer to: r0021, r0022		
<b>Note:</b>	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.		

---

<b>r0064</b>	<b>CO: Speed controller system deviation / n_ctrl system dev</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 5040, 6040
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	Displays the actual system deviation of the speed controller.		

---

<b>r0065</b>	<b>Slip frequency / f_Slip</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 2_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6310, 6700, 6727, 6730, 6732
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Hz]	- [Hz]	- [Hz]
<b>Description:</b>	Displays the slip frequency for induction motors (ASM).		

## 2 Parameters

### 2.2 List of parameters

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<b>r0066</b>	<b>CO: Output frequency / f_outp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 2_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6300, 6310, 6730, 6731, 6799
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Hz]	- [Hz]	- [Hz]
<b>Description:</b>	Display and connector output for the output frequency of the power unit.		
<b>Dependency:</b>	Refer to: r0024		
<b>Note:</b>	The output frequency is available smoothed (r0024) and unsmoothed (r0066). For vector control and operation with encoder (p0400 > 0), the following applies: The parameter value corresponds to the actual encoder speed.		

---

<b>r0067</b>	<b>CO: Output current maximum / I_outp max</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6300, 6640, 6724
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Display and connector output for the maximum output current of the power unit.		
<b>Dependency:</b>	The maximum output current is determined by the parameterized current limit and the motor and converter thermal protection. Refer to: p0290, p0640		

---

<b>r0068[0...1]</b>	<b>CO: Absolute current actual value / I_act abs val</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6300, 6714, 6799, 7017, 8014, 8017, 8018
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Displays actual absolute current.		
<b>Index:</b>	[0] = Unsmoothed [1] = Smoothed with p0045		
<b>Dependency:</b>	Refer to: r0027		
<b>Notice:</b>	The value is updated with the current controller sampling time.		
<b>Note:</b>	Absolute current value = $\sqrt{I_q^2 + I_d^2}$ The absolute value of the current actual value is available smoothed (r0027 with 300 ms, r0068[1] with p0045) and unsmoothed (r0068[0]).		

---

<b>r0069[0...6]</b>	<b>CO: Phase current actual value / I_phase act value</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> 6_5	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6730, 6731
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [A]	- [A]	- [A]
<b>Description:</b>	Display and connector output for the measured actual phase currents as peak value.		
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W [3] = Phase U offset [4] = Phase V offset [5] = Phase W offset [6] = Total U, V, W		

**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.

---

<b>r0070</b>	<b>CO: Actual DC link voltage / Vdc act val</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6723, 6724, 6730, 6731, 6799
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [V]	- [V]	- [V]
<b>Description:</b>	Display and connector output for the measured actual value of the DC link voltage.		
<b>Dependency:</b>	Refer to: r0026		
<b>Notice:</b>	When measuring a DC link voltage < 200 V, for the Power Module 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.		
<b>Note:</b>	The DC link voltage is available smoothed (r0026) and unsmoothed (r0070).		

---

<b>r0071</b>	<b>Maximum output voltage / U_output max</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6301, 6640, 6700, 6722, 6723, 6724, 6725, 6727
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Displays the maximum output voltage.		
<b>Dependency:</b>	The maximum output voltage depends on the actual DC link voltage (r0070) and the maximum modulation depth (p1803).		
<b>Note:</b>	As the (driven) motor load increases, the maximum output voltage drops as a result of the reduction in DC link voltage.		

---

<b>r0072</b>	<b>CO: Output voltage / U_output</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 5700, 6730, 6731, 6799
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Display and connector output for the actual output voltage of the power unit.		
<b>Dependency:</b>	Refer to: r0025		
<b>Note:</b>	The output voltage is available smoothed (r0025) and unsmoothed (r0072).		

---

<b>r0073</b>	<b>Maximum modulation depth / Modulat_depth max</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723, 6724
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Displays the maximum modulation depth.		
<b>Dependency:</b>	Refer to: p1803		

## 2 Parameters

### 2.2 List of parameters

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<b>r0074</b>	<b>CO: Modulat_depth / Modulat_depth</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 5730, 6730, 6731, 6799, 8940, 8950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Displays the actual modulation depth.		
<b>Dependency:</b>	Refer to: r0028		
<b>Note:</b>	For space vector modulation, 100% corresponds to the maximum output voltage without overcontrol. Values above 100 % indicate an overcontrol condition - values below 100% have no overcontrol. The phase voltage (phase-to-phase, rms) is calculated as follows: $(r0074 \times r0070) / (\sqrt{2} \times 100 \%)$ . The modulation depth is available smoothed (r0028) and unsmoothed (r0074).		

---

<b>r0075</b>	<b>CO: Current setpoint field-generating / Id_set</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6700, 6714, 6725
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Display and connector output for the field-generating current setpoint (Id_set).		
<b>Note:</b>	This value is irrelevant for the U/f control mode.		

---

<b>r0076</b>	<b>CO: Current actual value field-generating / Id_act</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 5700, 5714, 5730, 6700, 6714, 6799
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Display and connector output for the field-generating current actual voltage (Id_act).		
<b>Dependency:</b>	Refer to: r0029		
<b>Note:</b>	This value is irrelevant for the U/f control mode. The field-generating current actual value is available smoothed (r0029) and unsmoothed (r0076).		

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<b>r0077</b>	<b>CO: Current setpoint torque-generating / Iq_set</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6700, 6710
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Display and connector output for the torque-generating current setpoint.		
<b>Note:</b>	This value is irrelevant for the U/f control mode.		

---

<b>r0078</b>	<b>CO: Current actual value torque-generating / Iq_act</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6310, 6700, 6714, 6799
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Display and connector output for the torque-generating current actual voltage (Iq_act).		

**Dependency:** Refer to: r0030  
**Note:** This value is irrelevant for the U/f control mode.  
 The torque-generating current actual value is available smoothed (r0030 with 300 ms) and unsmoothed (r0078).

---

**r0079**      **CO: Torque setpoint / M\_set**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -
<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6020, 6060, 6710
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [Nm]	- [Nm]	- [Nm]

**Description:** Display and connector output for the torque setpoint at the output of the speed controller.

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**r0080[0...1]**      **CO: Torque actual value / M\_act**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -
<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6714, 6799
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [Nm]	- [Nm]	- [Nm]

**Description:** Display and connector output for actual torque value.  
**Index:** [0] = Unsmoothed  
 [1] = Smoothed with p0045  
**Dependency:** Refer to: r0031, p0045  
**Note:** The value is available smoothed (r0031 with 100 ms, r0080[1] with p0045) and unsmoothed (r0080[0]).

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**r0081**      **CO: Torque utilization / M\_Utilization**

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8012
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [%]	- [%]	- [%]

**Description:** Displays the torque utilization as a percentage.  
 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:  $r0081 = (r0079 / r1538) * 100 \%$   
 - Negative torque:  $r0081 = (-r0079 / -r1539) * 100 \%$

---

**r0082[0...2]**      **CO: Active power actual value / P\_act**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> r2004	<b>Dyn. index:</b> -
<b>Units group:</b> 14_5	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6714, 6799
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [kW]	- [kW]	- [kW]

**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]).

<b>r0083</b>	<b>CO: Flux setpoint / Flex setp</b>	<b>Access level:</b> 4 <b>Can be changed:</b> - <b>Units group:</b> - <b>Min</b> - [%]	<b>Calculated:</b> - <b>Scaling:</b> PERCENT <b>Unit selection:</b> - <b>Max</b> - [%]	<b>Data type:</b> FloatingPoint32 <b>Dyn. index:</b> - <b>Func. diagram:</b> 5722 <b>Factory setting</b> - [%]
<b>Description:</b>	Displays the flux setpoint.			
<b>r0084[0...1]</b>	<b>CO: Flux actual value / Flux act val</b>	<b>Access level:</b> 4 <b>Can be changed:</b> - <b>Units group:</b> - <b>Min</b> - [%]	<b>Calculated:</b> - <b>Scaling:</b> PERCENT <b>Unit selection:</b> - <b>Max</b> - [%]	<b>Data type:</b> FloatingPoint32 <b>Dyn. index:</b> - <b>Func. diagram:</b> 6730, 6731 <b>Factory setting</b> - [%]
<b>Description:</b>	Displays the flux actual value.			
<b>Index:</b>	[0] = Unsmoothed [1] = Smoothed			
<b>r0087</b>	<b>CO: Actual power factor / Cos phi act</b>	<b>Access level:</b> 3 <b>Can be changed:</b> - <b>Units group:</b> - <b>Min</b> -	<b>Calculated:</b> - <b>Scaling:</b> - <b>Unit selection:</b> - <b>Max</b> -	<b>Data type:</b> FloatingPoint32 <b>Dyn. index:</b> - <b>Func. diagram:</b> - <b>Factory setting</b> -
<b>Description:</b>	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.			
<b>r0089[0...2]</b>	<b>Actual phase voltage / U_phase act val</b>	<b>Access level:</b> 4 <b>Can be changed:</b> - <b>Units group:</b> 5_3 <b>Min</b> - [V]	<b>Calculated:</b> - <b>Scaling:</b> p2001 <b>Unit selection:</b> p0505 <b>Max</b> - [V]	<b>Data type:</b> FloatingPoint32 <b>Dyn. index:</b> - <b>Func. diagram:</b> 6719 <b>Factory setting</b> - [V]
<b>Description:</b>	Displays the actual phase voltage.			
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W			
<b>Note:</b>	The values are determined from the transistor power-on duration.			
<b>r0094</b>	<b>CO: Transformation angle / Transformat_angle</b>	<b>Access level:</b> 3 <b>Can be changed:</b> - <b>Units group:</b> - <b>Min</b> - [°]	<b>Calculated:</b> - <b>Scaling:</b> p2005 <b>Unit selection:</b> - <b>Max</b> - [°]	<b>Data type:</b> FloatingPoint32 <b>Dyn. index:</b> - <b>Func. diagram:</b> - <b>Factory setting</b> - [°]
<b>Description:</b>	Displays the transformation angle.			
<b>Dependency:</b>	Refer to: r1778			
<b>Note:</b>	The transformation angle corresponds to the electrical commutation angle.			



<b>p0100</b>	<b>IEC/NEMA mot stds / IEC/NEMA mot stds</b>				
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16		
	<b>Can be changed:</b> C(1)	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	0	2	0		
<b>Description:</b>	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.				
<b>Value:</b>	0: IEC-Motor (50 Hz, SI units) 1: NEMA motor (60 Hz, US units) 2: NEMA motor (60 Hz, SI units)				
<b>Dependency:</b>	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				
<b>Note:</b>	The parameter value is not reset when the factory setting is restored (p0010 = 30, p0970).				
<b>p0124[0...n]</b>	<b>CU detection via LED / CU detection LED</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> PDS		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	0	1	0		
<b>Description:</b>	Identification of the Control Unit using an LED.				
<b>Note:</b>	While p0124 = 1, the READY LED flashes green/orange or red/orange with 2 Hz at the appropriate Control Unit.				
<b>p0133[0...n]</b>	<b>Motor configuration / Motor config</b>				
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 bin		
<b>Description:</b>	Configuration of the motor when commissioning the motor.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Motor connection type	Delta	Star	-
	01	Motor 87 Hz operation	Yes	No	-
<b>Dependency:</b>	For standard induction motors (p0301 > 10000), bit 0 is automatically preassigned the connection type of the selected data set. For p0100 > 0 (60 Hz rated motor frequency), it is not possible to select bit 1. Refer to: p0304, p0305, p1082				
<b>Note:</b>	Re bit 00: When changing the bits, the rated motor voltage p0304 and the rated motor current p0305 are automatically converted to the selected connection type (star/delta). Re bit 01: 87 Hz operation is only possible in the delta connection type. When selected, the maximum speed p1082 is automatically preassigned for a maximum output frequency of 87 Hz.				

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<b>p0170</b>	<b>Number of Command Data Sets (CDS) / CDS count</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> C(15)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8560
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	2	4	2
<b>Description:</b>	Sets the number of Command Data Sets (CDS).		
<b>Dependency:</b>	Refer to: p0010, r3996		
<b>Notice:</b>	When the data sets are created, short-term communication interruptions may occur.		
<b>Note:</b>	It is possible to toggle between command parameters (BICO parameters) using this data set changeover.		

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<b>p0180</b>	<b>Number of Drive Data Sets (DDS) / DDS count</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> C(15)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8565
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	4	1
<b>Description:</b>	Sets the number of Drive Data Sets (DDS).		
<b>Dependency:</b>	Refer to: p0010, r3996		
<b>Notice:</b>	When the data sets are created, short-term communication interruptions may occur.		

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<b>r0197[0...1]</b>	<b>Bootloader version / Bootloader vers</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the bootloader version. Index 0: Displays the bootloader version. Index 1: Displays the bootloader version 3 (for CU320-2 and CU310-2) Value 0 means that boot loader 3 is not available.		
<b>Dependency:</b>	Refer to: r0018, r0198		
<b>Note:</b>	Example: The value 1010100 should be interpreted as V01.01.01.00.		

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<b>r0198[0...2]</b>	<b>BIOS/EEPROM data version / BIOS/EEPROM vers</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the BIOS and EEPROM data version. r0198[0]: BIOS version r0198[1]: EEPROM data version EEPROM 0 r0198[2]: EEPROM data version EEPROM 1		
<b>Dependency:</b>	Refer to: r0018, r0197		
<b>Note:</b>	Example: The value 1010100 should be interpreted as V01.01.01.00.		

<b>r0200[0...n]</b>	<b>Power unit code number actual / PU code no. act</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> PDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the unique code number of the power unit.		
<b>Note:</b>	r0200 = 0: No power unit data found		

<b>p0201[0...n]</b>	<b>Power unit code number / PU code no</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> C(2)	<b>Scaling:</b> -	<b>Dyn. index:</b> PDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	65535	0
<b>Description:</b>	Sets the actual code number from r0200 to acknowledge the power unit being used. When commissioned for the first time, the code number is automatically transferred from r0200 into p0201.		
<b>Note:</b>	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.		

<b>r0203[0...n]</b>	<b>Actual power unit type / PU actual type</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> PDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	2	400	-
<b>Description:</b>	Displays the type of power unit found.		
<b>Value:</b>	2: MICROMASTER 440 3: MICROMASTER 411 4: MICROMASTER 410 5: MICROMASTER 436 6: MICROMASTER 440 PX 7: MICROMASTER 430 100: SINAMICS S 101: SINAMICS S (value) 102: SINAMICS S (combi) 103: SINAMICS S120M (distributed) 112: PM220 (SINAMICS G120) 113: PM230 (SINAMICS G120) 114: PM240 (SINAMICS G120) 115: PM250 (SINAMICS G120 / S120) 116: PM260 (SINAMICS G120) 118: SINAMICS G120 Px 120: PM340 (SINAMICS S120) 126: SINAMICS ET200PRO 130: PM250D (SINAMICS G120D) 133: SINAMICS G120C 135: SINAMICS PMV40 136: SINAMICS PMV60 137: SINAMICS PMV80 138: SINAMICS G110M 150: SINAMICS G 151: PM330 (SINAMICS G120) 200: SINAMICS GM 250: SINAMICS SM 260: SINAMICS MC		

## 2 Parameters

### 2.2 List of parameters

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]

#### Power unit hardware properties / PU HW property

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> PDS
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

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

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	01	RFI filter available	Yes	No	-
	07	F3E regenerative feedback into the line supply	Yes	No	-
	08	Internal Braking Module	Yes	No	-
	12	Safe Brake Control (SBC) supported	No	Yes	-
	13	Safety Integrated supported	Yes	No	-
	14	Internal LC output filter	Yes	No	-
	15	Line voltage	1-phase	3-phase	-

#### p0205

#### Power unit application / PU application

PM230	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C(1, 2)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	1

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

**Note:** 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.

#### p0205

#### Power unit application / PU application

PM240	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250, PM260	<b>Can be changed:</b> C(1, 2)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0

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

**Note:** 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.

<b>r0206[0...4]</b>	<b>Rated power unit power / PU P<sub>rated</sub></b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> 14_6	<b>Unit selection:</b> p0100	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [kW]	- [kW]	- [kW]
<b>Description:</b>	Displays the rated power unit power for various load duty cycles.		
<b>Index:</b>	[0] = Rated value [1] = Load duty cycle with low overload [2] = Load duty cycle with high overload [3] = S1 cont duty cyc [4] = S6 load duty cycle		
<b>Dependency:</b>	IECdrives (p0100 = 0): Units kW NEMA drives (p0100 = 1): Units hp Refer to: p0100, p0205		
<b>r0207[0...4]</b>	<b>Rated power unit current / PU PI<sub>rated</sub></b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8014
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Displays the rated power unit power for various load duty cycles.		
<b>Index:</b>	[0] = Rated value [1] = Load duty cycle with low overload [2] = Load duty cycle with high overload [3] = Reserved [4] = Reserved		
<b>Dependency:</b>	Refer to: p0205		
<b>r0208</b>	<b>Rated power unit line supply voltage / PU U<sub>rated</sub></b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	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 %		
<b>r0209[0...4]</b>	<b>Power unit maximum current / PU I<sub>max</sub></b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8750, 8850, 8950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Displays the maximum output current of the power unit.		
<b>Index:</b>	[0] = Catalog [1] = Load duty cycle with low overload		

## 2 Parameters

### 2.2 List of parameters

[2] = Load duty cycle with high overload

[3] = Reserved

[4] = Reserved

**Dependency:** Refer to: p0205

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

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> C(2), T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
1 [V]	63000 [V]	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 (r1242, r1282) are then directly determined using p0210.

**Notice:** If, in the switched-off state (pulse inhibit), the 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 the next time the system is switched on. In this case, an appropriate alarm A07401 is output.

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

U\_rated = 230 V:

- p0210 = 200 ... 240 V

U\_rated = 400 V:

- p0210 = 380 ... 480 V

U\_rated = 690 V:

- p0210 = 660 ... 690 V

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#### p0219 Braking resistor braking power / R\_brake P\_brake

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> C(1, 2), T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> 14_6	<b>Unit selection:</b> p0100	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.00 [kW]	20000.00 [kW]	0.00 [kW]

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

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

**Note:** When setting a value for the braking power, the following calculations are made:

- p1240, p1280: 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) as a function of p0341, p0342 and p1082 (not for vector control with speed encoder).

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

<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> C(1, 2)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	4	0

**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

<b>Dependency:</b>	<p>The following parameters are influenced using p0230:</p> <p>p0230 = 1:          --&gt; p0233 (power unit, motor reactor) = filter inductance</p> <p>p0230 = 3:          --&gt; p0233 (power unit, motor reactor) = filter inductance          --&gt; p0234 (power unit sine-wave filter capacitance) = filter capacitance          --&gt; p0290 (power unit overload response) = inhibit pulse frequency reduction          --&gt; p1082 (maximum speed) = Fmax filter / pole pair number          --&gt; p1800 (pulse frequency) &gt;= nominal pulse frequency of the filter          --&gt; p1802 (modulator modes) = space vector modulation without overcontrol</p> <p>p0230 = 4:          --&gt; p0290 (power unit overload response) = inhibit pulse frequency reduction          --&gt; p1802 (modulator modes) = space vector modulation without overcontrol</p> <p>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.</p> <p>--&gt; p0233 (power unit, motor reactor) = filter inductance          --&gt; p0234 (power unit sine-wave filter capacitance) = filter capacitance          --&gt; p1082 (maximum speed) = Fmax filter / pole pair number          --&gt; p1800 (pulse frequency) &gt;= nominal pulse frequency of the filter</p> <p>Refer to: p0233, p0234, p0290, p1082, p1800, p1802</p>
<b>Note:</b>	<p>The parameter cannot be changed if the power unit (e.g. PM260) is equipped with an internal sine-wave filter. For sine-wave filters, the test pulse evaluation to detect short-circuits is always deactivated. If a filter type cannot be selected, then this filter type is not permitted for the Motor Module.</p> <p>p0230 = 1:          Power units with output reactor are limited to output frequencies of 150 Hz.</p> <p>p0230 = 3:          Power units with sine-wave filter are limited to output frequencies of 200 Hz.</p>

<b>r0231[0...1]</b>	<b>Power cable length maximum / Cable length max</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [m]	- [m]	- [m]
<b>Description:</b>	Displays the maximum permissible cable lengths between the drive unit and motor.		
<b>Index:</b>	[0] = Unshielded [1] = Shielded		
<b>Note:</b>	The display value is used to provide information for service and maintenance.		

<b>p0233</b>	<b>Power unit motor reactor / PU mot reactor</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(2), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [mH]	1000.000 [mH]	0.000 [mH]
<b>Description:</b>	Enter the inductance of a filter connected at the power unit output.		
<b>Dependency:</b>	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		
<b>Note:</b>	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 has an internal sine-wave filter.		

<b>p0234</b>	<b>Power unit sine-wave filter capacitance / PU sine filter C</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(2), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [µF]	1000.000 [µF]	0.000 [µF]
<b>Description:</b>	Enters the capacitance of a sine-wave filter connected at the power unit output.		
<b>Dependency:</b>	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		
<b>Note:</b>	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 has an internal sine-wave filter.		
<b>r0238</b>	<b>Internal power unit resistance / PU R internal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ohm]	- [ohm]	- [ohm]
<b>Description:</b>	Displays the internal resistance of the power unit (IGBT and line resistance).		
<b>p0287[0...1]</b>	<b>Ground fault monitoring thresholds / Gnd fit threshold</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	100.0 [%]	[0] 6.0 [%] [1] 16.0 [%]
<b>Description:</b>	Sets the shutdown thresholds for the ground fault monitoring. The setting is made as a percentage of the maximum current of the power unit (r0209).		
<b>Index:</b>	[0] = Threshold at which pre-charging starts [1] = Threshold at which pre-charging stops		
<b>Dependency:</b>	Refer to: p1901		
<b>Note:</b>	This parameter is only relevant for chassis power units.		
<b>r0289</b>	<b>CO: Maximum power unit output current / PU I_outp max</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Displays the actual maximum output current of the power unit taking into account derating factors.		
<b>p0290</b>	<b>Power unit overload response / PU overld response</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8014
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	13	2
<b>Description:</b>	Sets the response to a thermal overload condition of the power unit.		



The following quantities can result in a response to thermal overload:

- heat sink temperature (r0037.0).
- chip temperature (r0037.1).
- power unit overload I2t (r0036).

Possible measures to avoid thermal overload:

- reduce the output current limit r0289 and r0067 (for closed-loop speed or torque control) or the output frequency (for U/f control) indirectly via the output current limit and the intervention of the current limiting controller).
- reduce the pulse frequency.

A reduction, if parameterized, is always realized after an appropriate alarm is output.

<b>Value:</b>	0: Reduce output current or output frequency
	1: No reduction shutdown when overload threshold is reached
	2: Reduce I_output or f_output and f_pulse (not using I2t)
	3: Reduce the pulse frequency (not using I2t)
	12: I_output or f_output and automatic pulse frequency reduction
	13: Automatic pulse frequency reduction

**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).

For a thermal power unit overload, an appropriate alarm or fault is output, and r2135.15 or r2135.13 set.

Refer to: r0036, r0037, p0230, r2135

**Notice:** 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, 12, 13, the I2t overload detection of the power unit does not influence the response "Reduce pulse frequency".

When the motor data identification routine is selected, p0290 cannot be changed.

For short-circuit/ground fault detection, when the test pulse evaluation is active via p1901 "Test pulse evaluation configuration", the pulse frequency at the instant of switch on is briefly reduced.

<b>p0292[0...1]</b>	<b>Power unit temperature alarm threshold / PU T_alarm thresh</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0 [°C]	25 [°C]	[0] 5 [°C] [1] 15 [°C]	
<b>Description:</b>	Sets the alarm threshold for power unit overtemperatures. The value is set as a difference to the tripping (shutdown) temperature. Drive: If this threshold is exceeded, an overload alarm is generated and the system responds as parameterized in p0290. Infeed: When the threshold value is exceeded, only an overload alarm is output.		
<b>Index:</b>	[0] = Heat sink temperature [1] = Power semiconductor (chip) temperature		
<b>Dependency:</b>	Refer to: r0037, p0290		

<b>p0294</b>	<b>Power unit alarm with I2t overload / PU I2t alm thresh</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8014	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
10.0 [%]	100.0 [%]	95.0 [%]	
<b>Description:</b>	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.		

## 2 Parameters

### 2.2 List of parameters

**Dependency:** Refer to: r0036, p0290  
**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

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b> 0 [s]	<b>Max</b> 600 [s]	<b>Factory setting</b> 0 [s]

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

#### r0296

##### DC link voltage undervoltage threshold / Vdc U\_lower\_thresh

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b> - [V]	<b>Max</b> - [V]	<b>Factory setting</b> - [V]

**Description:** Threshold to detect a DC link undervoltage.  
If the DC link voltage falls below this threshold, the drive unit is tripped due to a DC link undervoltage condition.

#### r0297

##### DC link voltage overvoltage threshold / Vdc U\_upper\_thresh

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8750, 8760, 8850, 8864, 8950, 8964
<b>Min</b> - [V]	<b>Max</b> - [V]	<b>Factory setting</b> - [V]

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

#### p0300[0...n]

##### Motor type selection / Mot type sel

PM230	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS, p0130
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6310
	<b>Min</b> 0	<b>Max</b> 204	<b>Factory setting</b> 0

**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  
2: Synchronous motor  
10: 1LE1 induction motor  
13: 1LG6 induction motor  
17: 1LA7 induction motor  
19: 1LA9 induction motor

100: 1LE1 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.

**Caution:**

If a motor is selected, which is not contained in the motor lists (p0300 < 100), then the motor code number must be reset (p0301 = 0), if previously a motor was parameterized from the motor list.

**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.

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

PM240

**Access level:** 2**Calculated:** -**Data type:** Integer16

PM250, PM260

**Can be changed:** C(1, 3)**Scaling:** -**Dyn. index:** MDS, p0130**Units group:** -**Unit selection:** -**Func. diagram:** 6310**Min****Max****Factory setting**

0

277

0

**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

2: Synchronous motor

10: 1LE1 induction motor

13: 1LG6 induction motor

17: 1LA7 induction motor

19: 1LA9 induction motor

100: 1LE1 induction motor

204: 1LE4 synchronous motor

277: 1FK7 synchronous motor without encoder

**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.

**Caution:**

If a motor is selected, which is not contained in the motor lists (p0300 < 100), then the motor code number must be reset (p0301 = 0), if previously a motor was parameterized from the motor list.

**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****Access level:** 2**Calculated:** -**Data type:** Unsigned16**Can be changed:** C(1, 3)**Scaling:** -**Dyn. index:** MDS**Units group:** -**Unit selection:** -**Func. diagram:** -**Min****Max****Factory setting**

0

65535

0

**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

## 2 Parameters

### 2.2 List of parameters

**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. If a change is made to a non-catalog motor, then the motor code number should be reset (p0301 = 0).

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<b>p0304[0...n]</b>	<b>Rated motor voltage / Mot U<sub>rated</sub></b>		
<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301, 6724	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0 [Vrms]	20000 [Vrms]	0 [Vrms]	

**Description:** Sets the rated motor voltage (rating plate).  
**Notice:** 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.

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<b>p0305[0...n]</b>	<b>Rated motor current / Mot I<sub>rated</sub></b>		
<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]	

**Description:** Sets the rated motor current (rating plate).  
**Notice:** 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. If p0305 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is pre-assigned accordingly.  
**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.

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<b>p0306[0...n]</b>	<b>Number of motors connected in parallel / Motor qty</b>		
<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8	
<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
1	50	1	

**Description:** Sets the number (count) of motors that can be operated in parallel using one motor data set. Depending on the motor number entered, internally an equivalent motor is calculated. The following should be observed in motors connected in parallel:  
Rating plate data should only be entered for one motor: p0305, p0307  
The following parameters are also only valid for one motor: p0320, p0341, p0344, p0350 ... p0361  
All other motor parameters take into account the replacement/equivalent motor (e.g. r0331, r0333).  
**Recommend.:** For motors connected in parallel, external thermal protection should be provided for each individual motor.  
**Dependency:** Refer to: r0331, r0370, r0373, r0374, r0376, r0377, r0382  
**Caution:** The motors to be connected in parallel must be of the same type and size (same order no. (MLFB)). The mounting regulations when connecting motors in parallel must be carefully maintained!  
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 > 0).  
For induction motors that are connected in parallel, but which are not mechanically coupled with one another, then the following applies:  
- an individual motor must not be loaded beyond its stall point.

**Notice:** If p0306 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is appropriately pre-assigned.

**Note:** Only operation with U/f characteristic makes sense if more than 10 identical motors are connected in parallel.

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<b>p0307[0...n]</b>	<b>Rated motor power / Mot P<sub>rated</sub></b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 14_6	<b>Unit selection:</b> p0100	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [kW]	100000.00 [kW]	0.00 [kW]
<b>Description:</b>	Sets the rated motor power (rating plate).		
<b>Dependency:</b>	IECdrives (p0100 = 0): Units kW NEMA drives (p0100 = 1): Units hp NEMA drives (p0100 = 2): Unit kW Refer to: p0100		
<b>Notice:</b>	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.		
<b>Note:</b>	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.		

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<b>p0308[0...n]</b>	<b>Rated motor power factor / Mot cos phi rated</b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000	1.000	0.000
<b>Description:</b>	Sets the rated motor power factor (cos phi, rating plate). For a parameter value of 0.000, the power factor is internally calculated and displayed in r0332.		
<b>Dependency:</b>	This parameter is only available for p0100 = 0, 2. Refer to: p0100, p0309, r0332		
<b>Notice:</b>	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.		
<b>Note:</b>	The parameter is not used for synchronous motors (p0300 = 2xx). 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.		

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<b>p0309[0...n]</b>	<b>Rated motor efficiency / Mot eta<sub>rated</sub></b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	99.9 [%]	0.0 [%]
<b>Description:</b>	Sets the rated motor efficiency (rating plate). For a parameter value of 0.0, the power factor is internally calculated and displayed in r0332.		
<b>Dependency:</b>	This parameter is only visible for NEMA motors (p0100 = 1, 2). Refer to: p0100, p0308, r0332		
<b>Note:</b>	The parameter is not used for synchronous motors.		

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<b>p0310[0...n]</b>	<b>Rated motor frequency / Mot f<sub>rated</sub></b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Hz]	650.00 [Hz]	0.00 [Hz]
<b>Description:</b>	Sets the rated motor frequency (rating plate).		
<b>Dependency:</b>	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		
<b>Notice:</b>	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. 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).		
<b>Note:</b>	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.		

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<b>p0311[0...n]</b>	<b>Rated motor speed / Mot n<sub>rated</sub></b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]
<b>Description:</b>	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.		
<b>Dependency:</b>	If p0311 is changed and for p0314 = 0, the pole pair (r0313) is re-calculated automatically. Refer to: p0310, r0313, p0314		
<b>Notice:</b>	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. 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).		
<b>Note:</b>	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.		

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<b>p0312[0...n]</b>	<b>Rated motor torque / Mot M<sub>rated</sub></b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Nm]	1000000.00 [Nm]	0.00 [Nm]
<b>Description:</b>	Sets the rated motor torque (rating plate).		
<b>Notice:</b>	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.		

<b>r0313[0...n]</b>	<b>Motor pole pair number, actual (or calculated) / Mot PolePairNo act</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 5300
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	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.		
<b>Dependency:</b>	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		
<b>Note:</b>	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.		
<b>p0314[0...n]</b>	<b>Motor pole pair number / Mot pole pair No.</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	0
<b>Description:</b>	Sets the motor pole pair number. p0314 = 1: 2-pole motor p0314 = 2: 4-pole motor, etc.		
<b>Dependency:</b>	For p0314 = 0, the pole pair number is automatically calculated from the rated frequency (p0310) and the rated speed (p0311) and displayed in r0313.		
<b>Notice:</b>	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.		
<b>p0316[0...n]</b>	<b>Motor torque constant / Mot kT</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1, 3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 28_1	<b>Unit selection:</b> p0100	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Nm/A]	400.00 [Nm/A]	0.00 [Nm/A]
<b>Description:</b>	Sets the torque constant of the synchronous motor. p0316 = 0: The torque constant is calculated from the motor data. p0316 > 0: The selected value is used as torque constant.		
<b>Dependency:</b>	Refer to: r0334		
<b>Notice:</b>	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.		
<b>Note:</b>	This parameter is not used for induction motors (p0300 = 1xx).		

## 2 Parameters

### 2.2 List of parameters

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<b>p0318[0...n]</b>	<b>Motor stall current / Mot I_standstill</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]
<b>Description:</b>	Sets the stall current for synchronous motors (p0300 = 2xx).		
<b>Notice:</b>	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.		
<b>Note:</b>	This parameter is not used for induction motors (p0300 = 1xx).		

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<b>p0320[0...n]</b>	<b>Motor rated magnetizing current/short-circuit current / Mot I_mag_rated</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [Arms]	5000.000 [Arms]	0.000 [Arms]
<b>Description:</b>	Induction motors: Sets the rated motor magnetizing current. For p0320 = 0.000 the magnetizing current is internally calculated and displayed in r0331. Synchronous motors: Sets the rated motor short-circuit current.		
<b>Notice:</b>	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.		
<b>Note:</b>	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.		

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<b>p0322[0...n]</b>	<b>Maximum motor speed / Mot n_max</b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]
<b>Description:</b>	Sets the maximum motor speed.		
<b>Dependency:</b>	Refer to: p1082		
<b>Notice:</b>	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. If p0322 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly.		
<b>Note:</b>	The parameter has no significance for a value of p0322 = 0.		

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<b>p0323[0...n]</b>	<b>Maximum motor current / Mot I_max</b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1, 3)	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Arms]	20000.00 [Arms]	0.00 [Arms]
<b>Description:</b>	Sets the maximum permissible motor current (e.g. de-magnetizing current for synchronous motors).		
<b>Notice:</b>	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. 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 not effect for synchronous motors if a value of 0.0 is entered. The user-selectable current limit is entered into p0640.

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<b>p0325[0...n]</b>	<b>Motor pole position identification current 1st phase / Mot PolID I 1st ph</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [Arms]	10000.000 [Arms]	0.000 [Arms]
<b>Description:</b>	Sets the current for the 1st phase of the two-stage technique for pole position identification routine. The current of the 2nd phase is set in p0329. The two-stage technique is selected with p1980 = 4.		
<b>Dependency:</b>	Refer to: p0329, p1980, r1984, r1985, r1987		
<b>Notice:</b>	When the motor code (p0301) is changed, it is possible that p0325 is not pre-assigned. p0325 can be pre-assigned using p0340 = 3.		
<b>Note:</b>	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).		

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<b>p0326[0...n]</b>	<b>Motor stall torque correction factor / Mot M_stall_corr</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5 [%]	300 [%]	100 [%]
<b>Description:</b>	Sets the correction factor for the stall torque/force at a 600 V DC link voltage.		
<b>Notice:</b>	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.		
<b>Note:</b>	When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).		

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<b>p0327[0...n]</b>	<b>Optimum motor load angle / Mot phi_load opt</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6721
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [°]	135.0 [°]	90.0 [°]
<b>Description:</b>	Sets the optimum load angle for synchronous motors with reluctance torque. The load angle is measured at the rated motor current.		
<b>Notice:</b>	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.		
<b>Note:</b>	This parameter has no significance for induction motors. For synchronous motors without reluctance torque, a angle of 90 degrees must be set. When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).		

<b>p0328[0...n]</b>	<b>Motor reluctance torque constant / Mot kT_reluctance</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-1000.00 [mH]	1000.00 [mH]	0.00 [mH]
<b>Description:</b>	Sets the reluctance torque constant for synchronous motors with reluctance torque (e.g. 1FE ... motors). This parameter has no significance for induction motors.		
<b>Notice:</b>	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.		
<b>Note:</b>	For synchronous motors without reluctance torque, the value 0 must be set.		
<b>p0329[0...n]</b>	<b>Motor pole position identification current / Mot PolID current</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]
<b>Description:</b>	Sets the current for the pole position identification routine (p1980 = 1). 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.		
<b>Dependency:</b>	If a maximum current (p0323) was not parameterized, then p0329 is limited to the rated motor current. If p0329 is too small in order to determine the pole position (for p1980 = 1), then p0323 must be first parameterized and significantly greater than p0329. Refer to: p0325, p1980, r1984, r1985, r1987		
<b>Notice:</b>	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.		
<b>r0330[0...n]</b>	<b>Rated motor slip / Mot slip_rated</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Hz]	- [Hz]	- [Hz]
<b>Description:</b>	Displays the rated motor slip.		
<b>Dependency:</b>	The rated slip is calculated from the rated frequency, rated speed and number of pole pairs. Refer to: p0310, p0311, r0313		
<b>Note:</b>	The parameter is not used for synchronous motors (p0300 = 2xx).		
<b>r0331[0...n]</b>	<b>Actual motor magnetizing current/short-circuit current / Mot I_mag_rtd act</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6722, 6724
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Induction motor: Displays the rated magnetizing current from p0320. For p0320 = 0, the internally calculated magnetizing current is displayed. Synchronous motor: Displays the rated short-circuit current from p0320.		
<b>Dependency:</b>	If p0320 was not entered, then the parameter is calculated from the rating plate parameters.		

<b>r0332[0...n]</b>	<b>Rated motor power factor / Mot cos phi rated</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the rated power factor for induction motors. For IEC motors, the following applies (p0100 = 0): For p0308 = 0, the internally-calculated power factor is displayed. For p0308 > 0, this value is displayed. For NEMA motors, the following applies (p0100 = 1, 2): For p0309 = 0, the internally-calculated power factor is displayed. For p0309 > 0, this value is converted into the power factor and displayed.		
<b>Dependency:</b>	If p0308 is not entered, the parameter is calculated from the rating plate parameters.		
<b>Note:</b>	The parameter is not used for synchronous motors (p0300 = 2xx).		
<b>r0333[0...n]</b>	<b>Rated motor torque / Mot M<sub>rated</sub></b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 7_4	<b>Unit selection:</b> p0100	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Nm]	- [Nm]	- [Nm]
<b>Description:</b>	Displays the rated motor torque.		
<b>Dependency:</b>	IEC drives (p0100 = 0): unit Nm NEMA drives (p0100 = 1): unit lbf ft		
<b>Note:</b>	For induction motors, r0333 is calculated from p0307 and p0311. For synchronous motors, r0333 is calculated from p0305, p0316, p0327 and p0328.		
<b>r0334[0...n]</b>	<b>Actual motor-torque constant / Mot kT act</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 28_1	<b>Unit selection:</b> p0100	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Nm/A]	- [Nm/A]	- [Nm/A]
<b>Description:</b>	Displays the torque constant of the synchronous motor used.		
<b>Dependency:</b>	IEC drives (p0100 = 0): unit Nm / A NEMA drives (p0100 = 1): unit lbf ft / A		
<b>Note:</b>	This parameter is not used for induction motors (p0300 = 1xx). For synchronous motors, parameter r0334 is calculated from p0305, p0307 and p0311.		
<b>p0335[0...n]</b>	<b>Motor cooling type / Mot cool type</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C(1, 3), T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	128	0
<b>Description:</b>	Sets the motor cooling system used.		
<b>Value:</b>	0: Non-ventilated 1: Forced cooling 2: Liquid cooling 128: No fan		
<b>Dependency:</b>	For 1LA7 motors (p0300), the parameter is pre-set as a function of p0307 and p0311.		

## 2 Parameters

### 2.2 List of parameters

- Notice:** 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 motor model.  
1LA7 motors, frame size 56 are operated without fan.


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<b>r0337[0...n]</b>	<b>Rated motor EMF / Mot EMF<sub>rated</sub></b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [Vrms]	- [Vrms]	- [Vrms]	
<b>Description:</b>	Displays the rated EMF of the motor.		
<b>Note:</b>	EMF: Electromotive force		

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<b>p0340[0...n]</b>	<b>Automatic calculation motor/control parameters / Calc auto par</b>		
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
<b>Can be changed:</b> C(3), T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0	5	0	
<b>Description:</b>	Setting to automatically calculate motor parameters and U/f open-loop and closed-loop control parameters from the rating plate data.		
<b>Value:</b>	0: No calculation 1: Complete calculation 2: Calculation of equivalent circuit diagram parameters 3: Calculation of closed-loop control parameters 4: Calculation of controller parameters 5: Calculation of technological limits and threshold values		
<b>Notice:</b>	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, p0344, p0612, p0640, p1082, p1231, p1232, p1333, p1349, p1611, p1654, p1726, p1825, p1828 ... p1832, p1909, p1959, p2000, p2001, p2002, p2003, p3927, p3928 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, p1780, p1781, p1783, p1785, p1786, p1795 p0340 = 5: --> p1037, p1038, p1520, p1521, p1530, p1531, p1574, p1802, p1803, p2140, p2142, p2148, p2150, p2157, p2159, p2161, p2162, p2163, p2164, p2170, p2175, p2177, p2179, p2194 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.		

<b>p0341[0...n]</b>	<b>Motor moment of inertia / Mot M_mom of inert</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 25_1	<b>Unit selection:</b> p0100	<b>Func. diagram:</b> 5042, 5210, 6020, 6030, 6031
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000000 [kgm <sup>2</sup> ]	100000.000000 [kgm <sup>2</sup> ]	0.000000 [kgm <sup>2</sup> ]
<b>Description:</b>	Sets the motor moment of inertia (without load).		
<b>Dependency:</b>	IEC drives (p0100 = 0): unit kg m <sup>2</sup> NEMA drives (p0100 = 1): unit lb ft <sup>2</sup> The parameter value is included, together with p0342, in the rated starting time of the motor. Refer to: p0342, r0345		
<b>Notice:</b>	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.		
<b>Note:</b>	The product of p0341 * p0342 is used when the speed controller (p0340 = 4) is calculated automatically.		
<b>p0342[0...n]</b>	<b>Ratio between the total and motor moment of inertia / Mot MomInert Ratio</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 5042, 5210, 6020, 6030, 6031
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1.000	10000.000	1.000
<b>Description:</b>	Sets the ratio between the total moment of inertia/mass (load + motor) and the intrinsic motor moment of inertia/mass (no load).		
<b>Dependency:</b>	This means that together with p0341, the rated starting (accelerating time) of the motor is calculated for a vector drive. Refer to: p0341, r0345, p1498		
<b>Note:</b>	The product of p0341 * p0342 is used when the speed controller (p0340 = 4) is calculated automatically.		
<b>r0343[0...n]</b>	<b>Rated motor current identified / Mot I_rated ident</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Arms]	10000.00 [Arms]	- [Arms]
<b>Description:</b>	Displays the identified rated motor current.		
<b>p0344[0...n]</b>	<b>Motor weight (for the thermal motor model) / Mot weight th mod</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 27_1	<b>Unit selection:</b> p0100	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [kg]	50000.0 [kg]	0.0 [kg]
<b>Description:</b>	Sets the motor weight.		
<b>Dependency:</b>	IEC drives (p0100 = 0): unit kg NEMA drives (p0100 = 1): unit lb		
<b>Notice:</b>	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.		
<b>Note:</b>	The parameter influences the thermal 3 mass model of the induction motor. The parameter is not used for synchronous motors (p0300 = 2xx).		

<b>r0345[0...n]</b>	<b>Nominal motor starting time / Mot t_start_rated</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [s]	- [s]	- [s]
<b>Description:</b>	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).		
<b>Dependency:</b>	Refer to: r0313, r0333, p0341, p0342		
<b>p0346[0...n]</b>	<b>Motor excitation build-up time / Mot t_excitation</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	20.000 [s]	0.000 [s]
<b>Description:</b>	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.		
<b>Caution:</b>	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).		
			
<b>Note:</b>	The parameter is calculated using p0340 = 1, 3. For induction motors, the result depends on the rotor time constant (r0384). If this time is excessively reduced, this can result in an inadequate magnetizing of the induction motor. This is the case if the current limit is reached while building up magnetizing. For induction motors, the parameter cannot be set to 0 s (internal limit: 0.1 * r0384). For permanent-magnet synchronous motors and vector control, the value depends on the stator time constant (r0386). Here, it defines the time to establish the current for encoderless operation immediately after the pulses have been enabled.		
<b>p0347[0...n]</b>	<b>Motor de-excitation time / Mot t_de-excitat</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	20.000 [s]	0.000 [s]
<b>Description:</b>	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.		
<b>Note:</b>	The parameter is calculated using p0340 = 1, 3. For induction motors, the result depends on the rotor time constant (r0384). if this time is shortened too much, then this can result in an inadequate de-magnetizing of the induction motor and in an overcurrent condition when the pulses are subsequently enabled (only when the flying restart function is activated and the motor is rotating).		
<b>p0350[0...n]</b>	<b>Motor stator resistance cold / Mot R_stator cold</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,2	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00000 [ohm]	2000.00000 [ohm]	0.00000 [ohm]
<b>Description:</b>	Sets the stator resistance of the motor at ambient temperature p0625 (phase value).		
<b>Dependency:</b>	Refer to: p0625, r1912		

- Notice:** 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).

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<b>p0352[0...n]</b>	<b>Cable resistance / R_cable</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.00000 [ohm]	120.00000 [ohm]	0.00000 [ohm]	

**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.

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<b>p0354[0...n]</b>	<b>Motor rotor resistance cold / Mot R_r cold</b>		
<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,2	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6727	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.00000 [ohm]	300.00000 [ohm]	0.00000 [ohm]	

**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 data identification routine (p1910).

**Dependency:** Refer to: p0625

**Notice:** 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).

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<b>p0356[0...n]</b>	<b>Motor stator leakage inductance / Mot L_stator leak.</b>		
<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,2	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]	

**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).

**Notice:** 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.

<b>p0357[0...n]</b>	<b>Motor stator inductance d axis / Mot L_stator d</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,2	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]
<b>Description:</b>	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).		
<b>Note:</b>	For permanent-magnet synchronous motors (p0300 = 2), this is the non-saturated value and is ideal for a low current.		
<b>p0358[0...n]</b>	<b>Motor rotor leakage inductance / Mot L_rot leak</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,2	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6727
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]
<b>Description:</b>	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).		
<b>Notice:</b>	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.		
<b>Note:</b>	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).		
<b>p0360[0...n]</b>	<b>Motor magnetizing inductance / Mot Lh</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,2	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6727
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00000 [mH]	10000.00000 [mH]	0.00000 [mH]
<b>Description:</b>	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).		
<b>Notice:</b>	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.		
<b>Note:</b>	The parameter is not used for synchronous motors (p0300 = 2).		
<b>p0362[0...n]</b>	<b>Motor saturation characteristic flux 1 / Mot saturat.flux 1</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723, 6726
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10.0 [%]	800.0 [%]	60.0 [%]
<b>Description:</b>	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 %).		
<b>Dependency:</b>	The following applies for the flux values: p0362 < p0363 < p0364 < p0365 Refer to: p0366		
<b>Note:</b>	For induction motors, p0362 = 100 % 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 (p0300).		



<b>p0363[0...n]</b>	<b>Motor saturation characteristic flux 2 / Mot saturat.flux 2</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723, 6726
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10.0 [%]	800.0 [%]	85.0 [%]
<b>Description:</b>	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 %).		
<b>Dependency:</b>	The following applies for the flux values: p0362 < p0363 < p0364 < p0365 Refer to: p0367		
<b>Note:</b>	For induction motors, p0363 = 100 % 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 (p0300).		
<b>p0364[0...n]</b>	<b>Motor saturation characteristic flux 3 / Mot saturat.flux 3</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723, 6726
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10.0 [%]	800.0 [%]	115.0 [%]
<b>Description:</b>	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 3rd value pair of the characteristic. Sets the third flux value of the saturation characteristic as a [%] referred to the rated motor flux (100 %).		
<b>Dependency:</b>	The following applies for the flux values: p0362 < p0363 < p0364 < p0365 Refer to: p0368		
<b>Note:</b>	For induction motors, p0364 = 100 % 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 (p0300).		
<b>p0365[0...n]</b>	<b>Motor saturation characteristic flux 4 / Mot saturat.flux 4</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723, 6726
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10.0 [%]	800.0 [%]	125.0 [%]
<b>Description:</b>	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 4th value pair of the characteristic. Sets the fourth flux value of the saturation characteristic as a [%] referred to the rated motor flux (100 %).		
<b>Dependency:</b>	The following applies for the flux values: p0362 < p0363 < p0364 < p0365 Refer to: p0369		
<b>Note:</b>	For induction motors, p0365 = 100 % 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 (p0300).		

<b>p0366[0...n]</b>	<b>Motor saturation characteristic I_mag 1 / Mot sat. I_mag 1</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723, 6726
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5.0 [%]	800.0 [%]	50.0 [%]
<b>Description:</b>	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 1st value pair of the characteristic. Sets the first magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).		
<b>Dependency:</b>	The following applies for the magnetizing currents: p0366 < p0367 < p0368 < p0369 Refer to: p0362		
<b>Note:</b>	When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).		
<b>p0367[0...n]</b>	<b>Motor saturation characteristic I_mag 2 / Mot sat. I_mag 2</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723, 6726
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5.0 [%]	800.0 [%]	75.0 [%]
<b>Description:</b>	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).		
<b>Dependency:</b>	The following applies for the magnetizing currents: p0366 < p0367 < p0368 < p0369 Refer to: p0363		
<b>Note:</b>	When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).		
<b>p0368[0...n]</b>	<b>Motor saturation characteristic I_mag 3 / Mot sat. I_mag 3</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723, 6726
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5.0 [%]	800.0 [%]	150.0 [%]
<b>Description:</b>	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).		
<b>Dependency:</b>	The following applies for the magnetizing currents: p0366 < p0367 < p0368 < p0369 Refer to: p0364		
<b>Note:</b>	When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).		

<b>p0369[0...n]</b>	<b>Motor saturation characteristic I_mag 4 / Mot sat. I_mag 4</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723, 6726
	<b>Min</b> 5.0 [%]	<b>Max</b> 800.0 [%]	<b>Factory setting</b> 210.0 [%]
<b>Description:</b>	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).		
<b>Dependency:</b>	The following applies for the magnetizing currents: p0366 < p0367 < p0368 < p0369 Refer to: p0365		
<b>Note:</b>	When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).		
<b>r0370[0...n]</b>	<b>Motor stator resistance cold / Mot R_stator cold</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> - [ohm]	<b>Max</b> - [ohm]	<b>Factory setting</b> - [ohm]
<b>Description:</b>	Displays the motor stator resistance at an ambient temperature (p0625). The value does not include the cable resistance.		
<b>Dependency:</b>	Refer to: p0625		
<b>r0372[0...n]</b>	<b>Cable resistance / Mot R_cable</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> - [ohm]	<b>Max</b> - [ohm]	<b>Factory setting</b> - [ohm]
<b>Description:</b>	Displays the total cable resistance between power unit and motor, as well as the internal converter resistance.		
<b>Dependency:</b>	Refer to: r0238, p0352		
<b>r0373[0...n]</b>	<b>Motor rated stator resistance / Mot R_stator rated</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> - [ohm]	<b>Max</b> - [ohm]	<b>Factory setting</b> - [ohm]
<b>Description:</b>	Displays the rated motor stator resistance at rated temperature (total of p0625 and p0627).		
<b>Dependency:</b>	Refer to: p0627		
<b>Note:</b>	The parameter is not used for synchronous motors (p0300 = 2xx).		
<b>r0374[0...n]</b>	<b>Motor rotor resistance cold / Mot R_r cold</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> - [ohm]	<b>Max</b> - [ohm]	<b>Factory setting</b> - [ohm]
<b>Description:</b>	Displays the motor rotor resistance at an ambient temperature p0625.		

## 2 Parameters

### 2.2 List of parameters

**Dependency:** Refer to: p0625  
**Note:** The parameter is not used for synchronous motors (p0300 = 2xx).

---

<b>r0376[0...n]</b>	<b>Rated motor rotor resistance / Mot rated R_rotor</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [ohm]	- [ohm]	- [ohm]	

**Description:** Displays the nominal rotor resistance of the motor at the rated temperature.  
The rated temperature is the sum of p0625 and p0628.

**Dependency:** Refer to: p0628  
**Note:** The parameter is not used for synchronous motors (p0300 = 2xx).

---

<b>r0377[0...n]</b>	<b>Motor leakage inductance total / Mot L_leak total</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [mH]	- [mH]	- [mH]	

**Description:** Displays the stator leakage inductance of the motor including the motor reactor (p0233).

---

<b>r0378[0...n]</b>	<b>Motor stator inductance d axis / Mot L_stator d</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [mH]	- [mH]	- [mH]	

**Description:** Displays the stator longitudinal inductance of the synchronous motor including the motor reactor (p0233).

---

<b>r0382[0...n]</b>	<b>Motor magnetizing inductance transformed / Mot L_magn transf</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [mH]	- [mH]	- [mH]	

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

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

---

<b>r0384[0...n]</b>	<b>Motor rotor time constant / damping time constant d axis / Mot T_rotor/T_Dd</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6722	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [ms]	- [ms]	- [ms]	

**Description:** Displays the rotor time constant.

**Note:** 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.

<b>r0386[0...n]</b>	<b>Motor stator leakage time constant / Mot T_stator leak</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ms]	- [ms]	- [ms]
<b>Description:</b>	Displays the stator leakage time constant.		
<b>Note:</b>	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.		
<b>r0395[0...n]</b>	<b>Actual stator resistance / R_stator act</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ohm]	- [ohm]	- [ohm]
<b>Description:</b>	Displays the actual stator resistance (phase value). The parameter value also contains the temperature-independent cable resistance.		
<b>Dependency:</b>	In the case of induction motors the parameter is also affected by the motor temperature model. Refer to: p0350, p0352, p0620		
<b>Note:</b>	In each case, only the stator resistance of the active Motor Data Set is included with the stator temperature of the thermal motor model.		
<b>r0396[0...n]</b>	<b>Actual rotor resistance / R_rotor act</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6730
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ohm]	- [ohm]	- [ohm]
<b>Description:</b>	Displays the actual rotor resistance (phase value). The parameter is affected by the motor temperature model.		
<b>Dependency:</b>	Refer to: p0354, p0620		
<b>Note:</b>	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).		
<b>p0422[0...n]</b>	<b>Absolute encoder linear measuring step resolution / Enc abs meas step</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> C(4)	<b>Scaling:</b> -	<b>Dyn. index:</b> EDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 4704
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [nm]	4294967295 [nm]	100 [nm]
<b>Description:</b>	Sets the resolution of the absolute position for a linear absolute encoder.		
<b>Notice:</b>	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.		
<b>Note:</b>	The serial protocol of an absolute encoder provides the position with a certain resolution , e.g. 100 nm. This value must be entered here.		

## 2 Parameters

### 2.2 List of parameters

<b>p0490</b>	<b>Invert measuring probe / Probe inv</b>		
CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	-	-	0000 bin
CU240E-2 PN			

**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	-

**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).

<b>p0500</b>	<b>Technology application / Tec application</b>		
PM230	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C(1, 5), T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	3	3	3

**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 = 80 % (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 %

<b>p0500</b>	<b>Technology application / Tec application</b>		
PM240	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250, PM260	<b>Can be changed:</b> C(1, 5), T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	3	0

**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, 5 and when the calculation is initiated, the following parameters are set:

- p1574 = 10 V
- p1611 = 80 % (only p0500 = 5)
- p1750.2 = 0
- p1802 = 4 (SVM/FLB without overcontrol) (PM240: p1802 = 0, PM260: p1802 = 2)
- p1803 = 106 % (PM260: 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 (separately-excited synchronous motor: 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

<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> C(5)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
1	4	1

**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 can only be changed in an offline project using the commissioning software.

**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

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	1	0

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

## 2 Parameters

### 2.2 List of parameters

<b>Value:</b>	0: No 1: Yes
<b>Notice:</b>	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.
<b>Note:</b>	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.

#### p0580

#### Measuring probe input terminal / MT input terminal

CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	0	23	0
CU240E-2 PN			
<b>Description:</b>	Sets the input terminal for the measuring probe for speed actual value measurement.		
<b>Value:</b>	0: No meas probe 23: DI 3 (T. 8)		
<b>Dependency:</b>	Refer to: p0581		
<b>Note:</b>	DI: Digital Input		

#### p0581

#### Measuring probe edge / MT edge

CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	0	1	0
CU240E-2 PN			
<b>Description:</b>	Sets the edge to evaluate the measuring probe signal for speed actual value measurement. 0: 0/1 edge 1: 1/0 edge		
<b>Dependency:</b>	Refer to: p0580		

#### p0582

#### Measuring probe pulses per revolution / MT pulses per rev

CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	1	12	1
CU240E-2 PN			
<b>Description:</b>	Sets the number of pulses per revolution (e.g. for disks with holes).		

#### p0583

#### Measuring probe maximum measuring time / MT t\_meas max

CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	0.040 [s]	10.000 [s]	10.000 [s]
CU240E-2 PN			
<b>Description:</b>	Sets the maximum measuring time for the measuring probe. 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.		



**Dependency:** Refer to: r0586

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<b>p0585</b>	<b>Measuring probe gear factor / Probe gear factor</b>		
CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	0.00000	1000.00000	1.00000
CU240E-2 PN			

**Description:** Sets the BERO gear factor.  
The measured speed is multiplied by the BERO gear factor and is displayed in r0586.

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<b>r0586</b>	<b>CO: Measuring probe speed actual value / MT n_act</b>		
CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	- [rpm]	- [rpm]	- [rpm]
CU240E-2 PN			

**Description:** Displays the speed actual value measured using the BERO.  
**Dependency:** Refer to: p0580, p0583  
**Note:** For p0580 = 0 (no measuring probe), a value of zero is displayed here.

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<b>r0587</b>	<b>CO: Measuring probe measuring time measured / MT t_meas measured</b>		
CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	-	-	-
CU240E-2 PN			

**Description:** Displays the time between the last two BERO pulses.  
The measuring time is specified as 32-bit value with a resolution of 1/48  $\mu$ s.  
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.

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<b>r0588</b>	<b>CO: Measuring probe pulse counter / MT pulse counter</b>		
CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	-	-	-
CU240E-2 PN			

**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.

## 2 Parameters

### 2.2 List of parameters

<b>r0589</b>	<b>Measuring probe delay time / MT t_delay</b>		
CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	-	-	-
CU240E-2 PN			
<b>Description:</b>	<p>Displays the time since the last measuring pulse was detected.</p> <p>The delay time is specified as 32-bit value with a resolution of 1/48 µs.</p> <p>When a measuring pulse occurs (is received) the delay time is reset and is limited to the maximum measuring time in p0583.</p>		
<b>Dependency:</b>	Refer to: p0580		
<b>Note:</b>	For p0580 = 0 (no measuring probe), a value of zero is displayed here.		
<b>p0595</b>	<b>Technological unit selection / Tech unit select</b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C(5)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	46	1
<b>Description:</b>	<p>Selects the units for the parameters of the technology controller.</p> <p>For p0595 = 1, 2, the reference quantity set in p0596 is not active.</p>		
<b>Value:</b>	<p>1: %</p> <p>2: 1 referred no dimensions</p> <p>3: bar</p> <p>4: °C</p> <p>5: Pa</p> <p>6: ltr/s</p> <p>7: m³/s</p> <p>8: ltr/min</p> <p>9: m³/min</p> <p>10: ltr/h</p> <p>11: m³/h</p> <p>12: kg/s</p> <p>13: kg/min</p> <p>14: kg/h</p> <p>15: t/min</p> <p>16: t/h</p> <p>17: N</p> <p>18: kN</p> <p>19: Nm</p> <p>20: psi</p> <p>21: °F</p> <p>22: gallon/s</p> <p>23: inch³/s</p> <p>24: gallon/min</p> <p>25: inch³/min</p> <p>26: gallon/h</p> <p>27: inch³/h</p> <p>28: lb/s</p> <p>29: lb/min</p> <p>30: lb/h</p> <p>31: lbf</p> <p>32: lbf ft</p> <p>33: K</p> <p>34: rpm</p> <p>35: parts/min</p> <p>36: m/s</p> <p>37: ft³/s</p> <p>38: ft³/min</p>		

39: BTU/min  
 40: BTU/h  
 41: mbar  
 42: inch wg  
 43: ft wg  
 44: m wg  
 45: % r.h.  
 46: g/kg

**Dependency:** Only the unit of the technology controller parameters are switched over (unit group 9\_1).  
 Refer to: p0596

**Note:** When switching over from % into another unit, the following sequence applies:  
 - set p0596  
 - set p0595 to the required unit

---

<b>p0596</b>	<b>Technological unit reference quantity / Tech unit ref qty</b>		
<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.01	340.28235E36	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.

---

<b>p0601[0...n]</b>	<b>Motor temperature sensor type / Mot_temp_sens type</b>		
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8016	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0	4	0	

**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:** A thermal motor model is calculated corresponding to p0612.

**Caution:** Re 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 p0601 = 1:

Tripping resistance = 1650 Ohm. Wire breakage and short-circuit monitoring.

---

<b>p0604[0...n]</b>	<b>Mot_temp_mod 2/KTY alarm threshold / Mod 2/KTY A thresh</b>		
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8016	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.0 [°C]	240.0 [°C]	130.0 [°C]	

**Description:** Sets the alarm threshold for monitoring the motor temperature for motor temperature model 2 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.

## 2 Parameters

### 2.2 List of parameters

**Dependency:** Refer to: p0606, p0612  
**Notice:** 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 (p0300).

---

#### p0605[0...n] Mot\_temp\_mod 1/2 threshold / Mod 1/2 threshold

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8016, 8017
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.0 [°C]	240.0 [°C]	145.0 [°C]

**Description:** Sets the threshold for monitoring the motor temperature for motor temperature model 1/2 or KTY.  
Motor temperature model 1 (p0612.0 = 1): alarm threshold  
- Alarm A07012 is output after the alarm threshold is exceeded.  
Motor temperature model 2 (p0612.1 = 1) or KTY: fault threshold  
- Fault F07011 is output after the fault threshold is exceeded.

**Dependency:** Refer to: p0606, p0611, p0612

**Notice:** 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.  
Motor temperature model 1:

p0605 also defines the target temperature of the model for r0034 = 100 %. Therefore, p0605 has no influence on the time up to alarm A07012 being issued. The time is only determined by time constant p0611, the actual current and the reference value p0305.

**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 (p0300).

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#### p0606[0...n] Mot\_temp\_mod 2/KTY timer / Mod 2/KTY t\_timer

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8016
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.000 [s]	600.000 [s]	0.000 [s]

**Description:** Sets the timer for monitoring the motor temperature for motor temperature model 2 or KTY.  
This timer is started when the temperature alarm threshold (p0604) is exceeded.  
If the timer has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output.  
If the temperature fault threshold (p0605) is prematurely exceeded before the timer has expired, then fault F07011 is immediately output.

**Dependency:** Refer to: p0604, p0605

**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.

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#### p0607[0...n] Temperature sensor fault timer / Sensor fault time

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8016
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.000 [s]	600.000 [s]	0.100 [s]

**Description:** Sets the timer between the output of alarm and fault for a temperature sensor fault.  
If there is a sensor fault, this timer is started.  
If the sensor fault is still present after the timer has expired, a corresponding fault is output.

**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.

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<b>p0610[0...n]</b>	<b>Motor overtemperature response / Mot temp response</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C(3), T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8016, 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	12	12
<b>Description:</b>	Sets the system response when the motor temperature reaches the alarm threshold.		
<b>Value:</b>	0: No response only alarm no reduction of I_max 1: Messages, reduction of I_max 2: Messages, no reduction of I_max 12: Messages, no reduction of I_max, temperature storage		
<b>Dependency:</b>	Refer to: p0601, p0604, p0605, p0614, p0615		
<b>Note:</b>	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: An alarm is output and I_max is not reduced. If value = 1: An alarm is output and a timer is started. A fault is output if the alarm is still active after this timer has expired. - for KTY84, the following applies: I_max. is reduced - for PTC, the following is valid: I_max. is not reduced If value = 2: An alarm is output and a timer is started. A fault is output if the alarm is still active after this timer has expired. If value = 12: Behavior is always the same as for value 2. For motor temperature monitoring without temperature sensor, when switching off, the model temperature is saved in a non-volatile fashion. When switching on, the same value (reduced by p0614) is taken into account in the model calculation. As a consequence, the UL508C specification is fulfilled.		

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<b>p0611[0...n]</b>	<b>I2t motor model thermal time constant / I2t mot_mod T</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1, 3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [s]	20000 [s]	0 [s]
<b>Description:</b>	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 (rated motor current, if the motor standstill current is not parameterized) up until a temperature rise of 63 % of the continuously permissible winding temperature has been reached.		
<b>Dependency:</b>	This parameter is only used for synchronous motors (p0300 = 2xx, 4). Refer to: r0034, p0612, p0615		
<b>Notice:</b>	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. When exiting commissioning, p0612 is checked, and where relevant, is preassigned to a value that matches the motor power, if a temperature sensor was not parameterized (see p0601).		
<b>Note:</b>	When parameter p0611 is reset to 0, then this switches out the thermal I2t motor model (refer to p0612). If no temperature sensor is parameterized, then the ambient temperature for the thermal motor model is referred to p0625.		

## 2 Parameters

### 2.2 List of parameters

p0612[0...n]	Mot_temp_mod activation / Mot_temp_mod act				
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS, p0130		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8017		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 0010 0000 0010 bin		
<b>Description:</b>	Setting to activate the motor temperature model.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Activating motor temperature model 1 (I2t)	Yes	No	-
	01	Activate motor temperature model 2	Yes	No	-
	09	Activate motor temperature model 2 expansions	Yes	No	-
<b>Dependency:</b>	For synchronous motors, when exiting commissioning, temperature model 1 is automatically activated if a time constant has been entered in p0611.				
	Refer to: r0034, p0604, p0605, p0611, p0615, p0625, p0626, p0627, p0628				
<b>Note:</b>	Mot_temp_mod: motor temperature model				
	Re bit 00: This bit is used to activate/deactivate the motor temperature model for permanent-magnet synchronous motors.				
	Re bit 01: This bit is used to activate/deactivate the motor temperature model for induction motors.				
	Re bit 02: This bit is used to activate/deactivate the motor temperature model for 1FK7 motors without encoder. Motor temperature model 3 cannot be simultaneously activated with another motor temperature model.				

p0612[0...n]	Mot_temp_mod activation / Mot_temp_mod act				
PM240	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> Unsigned16		
PM250, PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS, p0130		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8017		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 0010 0000 0010 bin		
<b>Description:</b>	Setting to activate the motor temperature model.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Activating motor temperature model 1 (I2t)	Yes	No	-
	01	Activate motor temperature model 2	Yes	No	-
	02	Activate motor temperature model 3	Yes	No	-
	09	Activate motor temperature model 2 expansions	Yes	No	-
<b>Dependency:</b>	For synchronous motors, when exiting commissioning, temperature model 1 is automatically activated if a time constant has been entered in p0611.				
	Refer to: r0034, p0604, p0605, p0611, p0615, p0625, p0626, p0627, p0628				
<b>Note:</b>	Mot_temp_mod: motor temperature model				
	Re bit 00: This bit is used to activate/deactivate the motor temperature model for permanent-magnet synchronous motors.				
	Re bit 01: This bit is used to activate/deactivate the motor temperature model for induction motors.				
	Re bit 02: This bit is used to activate/deactivate the motor temperature model for 1FK7 motors without encoder. Motor temperature model 3 cannot be simultaneously activated with another motor temperature model.				

<b>p0614[0...n]</b>	<b>Thermal resistance adaptation reduction factor / Therm R_adapt red</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [%]	100 [%]	30 [%]
<b>Description:</b>	Sets the reduction factor for the overtemperature of the thermal adaptation of the stator/rotor resistance. The value is a starting value when switching on. Internally, after switch-on, the reduction factor has no effect corresponding to the thermal time constant.		
<b>Dependency:</b>	Refer to: p0610		
<b>Note:</b>	The reduction factor is only effective for p0610 = 12, and refers to the overtemperature.		
<b>p0615[0...n]</b>	<b>Mot_temp_mod 1 (I2t) fault threshold / I2t F thresh</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [°C]	220.0 [°C]	180.0 [°C]
<b>Description:</b>	Sets the fault threshold for monitoring the motor temperature for motor temperature model 1 (I2t). - Fault F07011 is output after the fault threshold is exceeded. - fault threshold for r0034 = 100 % * (p0615 - 40) / (p0605 - 40).		
<b>Dependency:</b>	The parameter is only used for permanent-magnet synchronous motors (p0300 = 2xx). Refer to: r0034, p0611, p0612		
<b>Notice:</b>	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.		
<b>Note:</b>	The hysteresis is 2 K.		
<b>p0620[0...n]</b>	<b>Thermal adaptation, stator and rotor resistance / Mot therm_adapt R</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	2	1
<b>Description:</b>	Sets the thermal adaptation of the stator/primary section resistance and rotor/secondary section resistance according to r0395 and r0396.		
<b>Value:</b>	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		
<b>Note:</b>	For p0620 = 1, the following applies: The stator resistance is adapted using the temperature in r0035 and the rotor resistance together with the model temperature in r0633. For p0620 = 2, the following applies: The stator resistance is adapted using the temperature in r0035. If applicable, the rotor temperature for adapting the rotor resistance is calculated from the stator temperature (r0035) as follows: $\theta_R = (r0628 + r0625) / (r0627 + r0625) * r0035$		

p0621[0...n]	Identification stator resistance after restart / Rst_ident Restart		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C(3), T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS, p0130
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> 0	<b>Max</b> 2	<b>Factory setting</b> 0
<b>Description:</b>	<p>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.</p>		
	<p>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.</p>		
	<p>p0621 = 2: Identification of the stator resistance every time the drive is powered up (pulse enable).</p>		
<b>Value:</b>	<p>0: No Rs identification 1: Rs identification after switching-on again 2: Rs identification after switching-on each time</p>		
<b>Dependency:</b>	<p>- perform motor data identification (see p1910) with cold motor. - enter ambient temperature at time of motor data identification in p0625. Refer to: p0622, r0623</p>		
<b>Notice:</b>	<p>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.</p>		
<b>Note:</b>	<p>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.</p>		
p0622[0...n]	Motor excitation time for Rs_ident after powering up again / t_excit Rs_id		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS, p0130
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> 0.000 [s]	<b>Max</b> 20.000 [s]	<b>Factory setting</b> 0.000 [s]
<b>Description:</b>	<p>Sets the excitation time of the motor for the stator resistance identification after powering up again (restart).</p>		
<b>Dependency:</b>	<p>Refer to: p0621, r0623</p>		
<b>Note:</b>	<p>For p0622 &lt; 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 &gt;= 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.</p>		



<b>p0623</b>	<b>Rs identification stator resistance after switch on again / Rs-id Rs aft sw-on</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ohm]	- [ohm]	- [ohm]
<b>Description:</b>	Displays the stator resistance determined using the Rs identification after switching on again.		
<b>Dependency:</b>	Refer to: p0621, p0622		
<b>p0625[0...n]</b>	<b>Motor ambient temperature during commissioning / Mot T_ambient</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,2	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-40 [°C]	80 [°C]	20 [°C]
<b>Description:</b>	Defines the ambient temperature of the motor for calculating the motor temperature model.		
<b>Dependency:</b>	Refer to: p0350, p0354		
<b>Note:</b>	The parameters for stator and rotor resistance (p0350, p0354) refer to this temperature. If the thermal I2t motor model is activated for permanent-magnet synchronous motors (refer to p0611), p0625 is included in the model calculation if a temperature sensor is not being used (see p0601).		
<b>p0626[0...n]</b>	<b>Motor overtemperature, stator core / Mot T_over core</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,2	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 21_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10 [K]	200 [K]	50 [K]
<b>Description:</b>	Defines the rated overtemperature of the stator core referred to the ambient temperature.		
<b>Dependency:</b>	For 1LA7 motors (p0300), the parameter is pre-set as a function of p0307 and p0311. Refer to: p0625		
<b>Notice:</b>	When selecting a standard induction motor listed in the catalog (p0300 > 100, p0301 > 10000), this parameter is automatically preassigned and is write protected. Information in p0300 should be carefully observed when removing write protection.		
<b>Note:</b>	When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).		
<b>p0627[0...n]</b>	<b>Motor overtemperature, stator winding / Mot T_over stator</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,2	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 21_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	15 [K]	200 [K]	80 [K]
<b>Description:</b>	Defines the rated overtemperature of the stator winding referred to the ambient temperature.		
<b>Dependency:</b>	For 1LA7 motors (p0300), the parameter is pre-set as a function of p0307 and p0311. Refer to: p0625		
<b>Notice:</b>	When selecting a standard induction motor listed in the catalog (p0300 > 100, p0301 > 10000), this parameter is automatically preassigned and is write protected. Information in p0300 should be carefully observed when removing write protection.		
<b>Note:</b>	When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).		

<b>p0628[0...n]</b>	<b>Motor overtemperature rotor winding / Mot T_over rotor</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,2	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 21_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	20 [K]	200 [K]	100 [K]
<b>Description:</b>	Defines the rated overtemperature of the squirrel cage rotor referred to ambient temperature.		
<b>Dependency:</b>	For 1LA7 motors (p0300), the parameter is pre-set as a function of p0307 and p0311. Refer to: p0625		
<b>Notice:</b>	When selecting a standard induction motor listed in the catalog (p0300 > 100, p0301 > 10000), this parameter is automatically preassigned and is write protected. Information in p0300 should be carefully observed when removing write protection.		
<b>Note:</b>	When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (p0300).		
<b>r0630[0...n]</b>	<b>Mot_temp_mod ambient temperature / Mod T_ambient</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2006	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [°C]	- [°C]	- [°C]
<b>Description:</b>	Displays the ambient temperature of the motor temperature model (models 2 and 3).		
<b>r0631[0...n]</b>	<b>Mot_temp_mod stator iron temperature / Mod T_stator</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2006	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [°C]	- [°C]	- [°C]
<b>Description:</b>	Displays the stator iron temperature of the motor temperature model (models 2 and 3).		
<b>r0632[0...n]</b>	<b>Mot_temp_mod stator winding temperature / Mod T_winding</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2006	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [°C]	- [°C]	- [°C]
<b>Description:</b>	Displays the stator winding temperature of the motor temperature model (models 2 and 3).		
<b>r0633[0...n]</b>	<b>Mot_temp_mod rotor temperature / Mod rotor temp</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2006	<b>Dyn. index:</b> MDS
	<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [°C]	- [°C]	- [°C]
<b>Description:</b>	Displays the rotor temperature of the motor temperature model (model 2).		

<b>p0634[0...n]</b>	<b>Q flux flux constant unsaturated / PSIQ KPSI UNSAT</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [Vsrms]	100.000 [Vsrms]	0.000 [Vsrms]
<b>Description:</b>	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.		
<b>p0635[0...n]</b>	<b>Q flux quadrature axis current constant unsaturated / PSIQ KIQ UNSAT</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p0634		
<b>p0636[0...n]</b>	<b>Q flux direct axis current constant unsaturated / PSIQ KID UNSAT</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p0634		
<b>p0637[0...n]</b>	<b>Q flux flux gradient saturated / PSIQ Grad SAT</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [mH]	10000.00 [mH]	0.00 [mH]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p0634, p0635, p0636		
<b>p0640[0...n]</b>	<b>Current limit / Current limit</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1, 3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 5722, 6640
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]
<b>Description:</b>	Sets the current limit.		
<b>Dependency:</b>	Refer to: r0209, p0323		
<b>Note:</b>	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.		

## 2 Parameters

### 2.2 List of parameters

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).

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<b>p0641[0...n]</b>	<b>CI: Current limit variable / Curr lim var</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6640
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	Sets the signal source for the variable current limit. The value is referred to p0640.		

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<b>p0650[0...n]</b>	<b>Actual motor operating hours / Mot t_oper act</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [h]	4294967295 [h]	0 [h]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p0651		
<b>Note:</b>	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).		

---

<b>p0651[0...n]</b>	<b>Motor operating hours maintenance interval / Mot t_op maint</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [h]	150000 [h]	0 [h]
<b>Description:</b>	Sets the service/maintenance intervals in hours for the appropriate motor. An appropriate fault is output when the operating hours set here are reached.		
<b>Dependency:</b>	Refer to: p0650		
<b>Note:</b>	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). If there is no temperature monitor, then interconnect to a fixed value. Re index 3: When the binector input is interconnected, pre-charging is switched-on independent of the magnitude of the pre-charging threshold.		

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<b>r0720[0...4]</b>	<b>CU number of inputs and outputs / CU I/O count</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2119
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	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 term act val**

CU240B-2	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240B-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2201, 2202, 2220, 2221, 2255, 2256
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**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).

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	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	-

**Note:**  
 AI: Analog Input  
 DI: Digital Input  
 T: Terminal

---

**r0721 CU digital inputs terminal actual value / CU DI term act val**

CU240E-2	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2201, 2202, 2220, 2221, 2255, 2256
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	-	-	-
CU240E-2 PN	-	-	-

**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).

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	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	-

**Note:**  
 AI: Analog Input  
 DI: Digital Input  
 T: Terminal

## 2 Parameters

### 2.2 List of parameters

<b>r0722.0...11</b>		<b>CO/BO: CU digital inputs status / CU DI status</b>			
CU240B-2	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
CU240B-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2020, 2030, 2031, 2100, 2119, 2120, 2130, 2131, 2132, 2133		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the status of the digital inputs.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	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	-
<b>Dependency:</b>	Refer to: r0723				
<b>Note:</b>	AI: Analog Input DI: Digital Input T: Terminal				

<b>r0722.0...12</b>		<b>CO/BO: CU digital inputs status / CU DI status</b>			
CU240E-2	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2020, 2030, 2031, 2100, 2119, 2120, 2130, 2131, 2132, 2133		
CU240E-2_F					
CU240E-2_PN_F					
CU240E-2 PN	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the status of the digital inputs.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	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	-
<b>Dependency:</b>	Refer to: r0723				
<b>Note:</b>	AI: Analog Input DI: Digital Input T: Terminal				

<b>r0723.0...11</b>		<b>CO/BO: CU digital inputs status inverted / CU DI status inv</b>			
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
CU240B-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2020, 2030, 2031, 2100, 2119, 2120, 2130, 2131, 2132, 2133		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the inverted status of the digital inputs.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	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	-

**Dependency:** Refer to: r0722  
**Note:** AI: Analog Input  
 DI: Digital Input  
 T: Terminal

---

**r0723.0...12 CO/BO: CU digital inputs status inverted / CU DI status inv**

CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2020, 2030, 2031, 2100, 2119, 2120, 2130, 2131, 2132, 2133
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Displays the inverted status of the digital inputs.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	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	-

**Dependency:** Refer to: r0722  
**Note:** AI: Analog Input  
 DI: Digital Input  
 T: Terminal

---

**p0724 CU digital inputs debounce time / CU DI t\_debounce**

	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	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  $T_p$  ( $T_p = p0724 / 2$  ms).  
 DI: Digital Input

---

**p0730 BI: CU signal source for terminal DO 0 / CU S\_src DO 0**

	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2119, 2030, 2130
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	52.3

**Description:** Sets the signal source for terminal DO 0 (NO: T. 19 / NC: T. 18).

**Recommend.:**  
 r0052.0 Ready for switching on  
 r0052.1 Ready for operation  
 r0052.2 Operation enabled  
 r0052.3 Fault present  
 r0052.4 Coast down active (OFF2)

## 2 Parameters

### 2.2 List of parameters

r0052.5 Quick stop active (OFF3)  
 r0052.6 Switching on inhibited active  
 r0052.7 Alarm present  
 r0052.9 Control request  
 r0052.14 Motor rotates forwards  
 r0053.0 DC braking active  
 r0053.1 n\_act > p2167 (n\_off)  
 r0053.2 n\_act <= p1080 (n\_min)  
 r0053.3 l\_act > p2170  
 r0053.4 n\_act > p2155  
 r0053.5 n\_act <= p2155  
 r0053.6 n\_act >= n\_set  
 r0053.10 Technology controller output at the lower limit  
 r0053.11 Technology controller output at the upper limit

**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

#### BI: CU signal source for terminal DO 1 / CU S\_src DO 1

CU240E-2	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2119, 2030, 2130
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	-	-	52.7
CU240E-2 PN			

**Description:** Sets the signal source for terminal DO 1 (NO: T. 21).

**Recommend.:** r0052.0 Ready for switching on  
 r0052.1 Ready for operation  
 r0052.2 Operation enabled  
 r0052.3 Fault present  
 r0052.4 Coast down active (OFF2)  
 r0052.5 Quick stop active (OFF3)  
 r0052.6 Switching on inhibited active  
 r0052.7 Alarm present  
 r0052.9 Control request  
 r0052.14 Motor rotates forwards  
 r0053.0 DC braking active  
 r0053.1 n\_act > p2167 (n\_off)  
 r0053.2 n\_act <= p1080 (n\_min)  
 r0053.3 l\_act > p2170  
 r0053.4 n\_act > p2155  
 r0053.5 n\_act <= p2155  
 r0053.6 n\_act >= n\_set  
 r0053.10 Technology controller output at the lower limit  
 r0053.11 Technology controller output at the upper limit

**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



<b>p0732</b>		<b>BI: CU signal source for terminal DO 2 / CU S_src DO 2</b>		
CU240E-2	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary	
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2119, 2030, 2130	
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_PN_F	-	-	52.2	
CU240E-2 PN				
<b>Description:</b>	Sets the signal source for terminal DO 2 (NO: T. 24 / NC: T. 23).			
<b>Recommend.:</b>	r0052.0 Ready for switching on r0052.1 Ready for operation r0052.2 Operation enabled r0052.3 Fault present r0052.4 Coast down active (OFF2) r0052.5 Quick stop active (OFF3) r0052.6 Switching on inhibited active r0052.7 Alarm present r0052.9 Control request r0052.14 Motor rotates forwards r0053.0 DC braking active r0053.1 n_act > p2167 (n_off) r0053.2 n_act <= p1080 (n_min) r0053.3 l_act > p2170 r0053.4 n_act > p2155 r0053.5 n_act <= p2155 r0053.6 n_act >= n_set r0053.10 Technology controller output at the lower limit r0053.11 Technology controller output at the upper limit			
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.			
<b>Note:</b>	DO: Digital Output T: Terminal Relay output: NO = normally open, NC = normally closed			

<b>r0747</b>		<b>CU digital outputs status / CU DO status</b>			
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
CU240B-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2130, 2131, 2132, 2133		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the status of digital outputs.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	DO 0 (NO: T. 19 / NC: T. 18)	High	Low	-
<b>Note:</b>	DO: Digital Output T: Terminal Relay output: NO = normally open, NC = normally closed Inversion using p0748 has been taken into account.				

## 2 Parameters

### 2.2 List of parameters

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<b>r0747</b>	<b>CU digital outputs status / CU DO status</b>		
CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2130, 2131, 2132, 2133
CU240E-2_F			
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	-

**Description:** Displays the status of digital outputs.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	DO 0 (NO: T. 19 / NC: T. 18)	High	Low	-
	01	DO 1 (NO: T. 21)	High	Low	-
	02	DO 2 (NO: T. 24 / NC: T. 23)	High	Low	-

**Note:** DO: Digital Output  
T: Terminal  
Relay output: NO = normally open, NC = normally closed  
Inversion using p0748 has been taken into account.

---

<b>p0748</b>	<b>CU invert digital outputs / CU DO inv</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240B-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2201, 2202, 2240, 2242
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0000 bin

**Description:** Setting to invert the signals at the digital outputs.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	DO 0 (NO: T. 19 / NC: T. 18)	Inverted	Not inverted	-

**Note:** DO: Digital Output  
T: Terminal  
Relay output: NO = normally open, NC = normally closed

---

<b>p0748</b>	<b>CU invert digital outputs / CU DO inv</b>		
CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2201, 2202, 2240, 2242
CU240E-2_F			
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	0000 bin

**Description:** Setting to invert the signals at the digital outputs.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	DO 0 (NO: T. 19 / NC: T. 18)	Inverted	Not inverted	-
	01	DO 1 (NO: T. 21)	Inverted	Not inverted	-
	02	DO 2 (NO: T. 24 / NC: T. 23)	Inverted	Not inverted	-

**Note:** DO: Digital Output  
T: Terminal  
Relay output: NO = normally open, NC = normally closed

<b>r0751.0...9</b>	<b>BO: CU analog inputs status word / CU AI status word</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2250, 2251
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display and binector output for the status of the analog inputs.		
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>
	00	Analog input AI0 wire breakage	Yes
	01	Analog input AI1 wire breakage	Yes
	08	Analog input AI0 no wire breakage	Yes
	09	Analog input AI1 no wire breakage	Yes
			<b>0 signal</b>
			No
			No
			No
			No
			<b>FP</b>
			-
			-
			-
<b>Note:</b>	AI: Analog Input		
<b>r0752[0...1]</b>	<b>CO: CU analog inputs input voltage/current actual / CU AI U/I_inp act</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9566, 9568, 9576
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	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.		
<b>Index:</b>	[0] = AI0 (T. 3/4)		
	[1] = AI1 (T. 10/11)		
<b>Dependency:</b>	The type of analog input AIx (voltage or current input) is set using p0756.		
	Refer to: p0756		
<b>Note:</b>	AI: Analog Input		
	T: Terminal		
<b>p0753[0...1]</b>	<b>CU analog inputs smoothing time constant / CU AI T_smooth</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9566, 9568, 9576
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [ms]	1000.0 [ms]	0.0 [ms]
<b>Description:</b>	Sets the smoothing time constant of the 1st-order low pass filter for the analog inputs.		
<b>Index:</b>	[0] = AI0 (T. 3/4)		
	[1] = AI1 (T. 10/11)		
<b>Note:</b>	AI: Analog Input		
	T: Terminal		
<b>r0755[0...1]</b>	<b>CO: CU analog inputs actual value in percent / CU AI value in %</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9566, 9568, 9576
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Displays the currently referred input value of the analog inputs.		
	When interconnected, the signals are referred to the reference quantities p200x and p205x.		
<b>Index:</b>	[0] = AI0 (T. 3/4)		
	[1] = AI1 (T. 10/11)		
<b>Note:</b>	AI: Analog Input		
	T: Terminal		

**p0756[0...1]**


**CU analog inputs type / CU AI type**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9566, 9568, 9576
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	8	[0] 4 [1] 4

**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:**  
 0: Unipolar voltage input (0 V ... +10 V)  
 1: Unipolar voltage input monitored (+2 V ... +10 V)  
 2: Unipolar current input (0 mA ... +20 mA)  
 3: Unipolar current input monitored (+4 mA to +20 mA)  
 4: Bipolar voltage input (-10 V ... +10 V)  
 8: No sensor connected

**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, 4, p0757 is set to 0.0 V, p0758 = 0.0 %, p0759 = 10.0 V and p0760 = 100.0 %.  
 For p0756 = 1, p0757 is set to 2.0 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 %.

**p0757[0...1]**

**CU analog inputs characteristic value x1 / CU AI char x1**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9566, 9568, 9576
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-50.000	160.000	0.000

**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**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9566, 9568, 9576
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-1000.00 [%]	1000.00 [%]	0.00 [%]

**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.

---

<b>p0759[0...1]</b>	<b>CU analog inputs characteristic value x2 / CU AI char x2</b>		
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9566, 9568, 9576	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-50.000	160.000	10.000	

**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.

---

<b>p0760[0...1]</b>	<b>CU analog inputs characteristic value y2 / CU AI char y2</b>		
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9566, 9568, 9576	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-1000.00 [%]	1000.00 [%]	100.00 [%]	

**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.

---

<b>p0761[0...1]</b>	<b>CU analog inputs wire breakage monitoring response threshold / CU WireBrkThresh</b>		
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9566, 9568	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.00	20.00	2.00	

**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.

**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.

---

<b>p0762[0...1]</b>	<b>CU analog inputs wire breakage monitoring delay time / CU wire brk t_del</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9566, 9568	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0 [ms]	1000 [ms]	100 [ms]	

**Description:** Sets the delay time for the wire breakage monitoring of the analog inputs.

## 2 Parameters

### 2.2 List of parameters

**Index:** [0] = AI0 (T. 3/4)  
[1] = AI1 (T. 10/11)  
**Note:** AI: Analog Input

---

<b>p0764[0...1]</b>	<b>CU analog inputs dead zone / CU AI dead zone</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2251
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [V]	20.000 [V]	0.000 [V]
<b>Description:</b>	Determines the width of the dead zone at the analog input. Analog input type unipolar (e.g. 0 ... +10 V): The dead zone starts with the characteristic value x1/y1 (p0757/p0758). Analog input type bipolar (e.g. -10 V ... +10 V): The dead zone is located at the symmetrical center between characteristic value x1/y1 (p0757/p0758) and x2/y2 (p0759/p0760). The set value doubles the dead zone.		
<b>Index:</b>	[0] = AI0 (T. 3/4) [1] = AI1 (T. 10/11)		
<b>Note:</b>	AI: Analog Input T: Terminal		

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<b>p0771[0...1]</b>	<b>CI: CU analog outputs signal source / CU AO S_src</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2261
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	[0] 21[0] [1] 27[0]
<b>Description:</b>	Sets the signal source for the analog outputs.		
<b>Index:</b>	[0] = AO0 (T 12/13) [1] = AO1 (T 26/27)		
<b>Note:</b>	AO: Analog Output T: Terminal		

---

<b>r0772[0...1]</b>	<b>CU analog outputs output value currently referred / CU AO outp act ref</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9572
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Displays the actual referred output value of the analog outputs.		
<b>Index:</b>	[0] = AO0 (T 12/13) [1] = AO1 (T 26/27)		
<b>Note:</b>	AO: Analog Output T: Terminal		

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<b>p0773[0...1]</b>	<b>CU analog outputs smoothing time constant / CU AO T_smooth</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9572
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [ms]	1000.0 [ms]	0.0 [ms]
<b>Description:</b>	Sets the smoothing time constant of the 1st-order low pass filter for the analog outputs.		

**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\_out**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9572
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**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**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9572
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	1	0

**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**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9572
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	2	0

**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.

<b>p0777[0...1]</b>	<b>CU analog outputs characteristic value x1 / CU AO char x1</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9572
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-1000.00 [%]	1000.00 [%]	0.00 [%]
<b>Description:</b>	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.		
<b>Index:</b>	[0] = AO0 (T 12/13) [1] = AO1 (T 26/27)		
<b>Dependency:</b>	Refer to: p0776		
<b>Notice:</b>	This parameter is automatically overwritten when changing p0776 (type of analog outputs).		
<b>Note:</b>	The parameters for the characteristic do not have a limiting effect.		
<b>p0778[0...1]</b>	<b>CU analog outputs characteristic value y1 / CU AO char y1</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9572
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-20.000 [V]	20.000 [V]	0.000 [V]
<b>Description:</b>	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.		
<b>Index:</b>	[0] = AO0 (T 12/13) [1] = AO1 (T 26/27)		
<b>Dependency:</b>	The unit of this parameter (V or mA) depends on the analog output type. Refer to: p0776		
<b>Notice:</b>	This parameter is automatically overwritten when changing p0776 (type of analog outputs).		
<b>Note:</b>	The parameters for the characteristic do not have a limiting effect.		
<b>p0779[0...1]</b>	<b>CU analog outputs characteristic value x2 / CU AO char x2</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9572
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-1000.00 [%]	1000.00 [%]	100.00 [%]
<b>Description:</b>	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.		
<b>Index:</b>	[0] = AO0 (T 12/13) [1] = AO1 (T 26/27)		
<b>Dependency:</b>	Refer to: p0776		
<b>Notice:</b>	This parameter is automatically overwritten when changing p0776 (type of analog outputs).		
<b>Note:</b>	The parameters for the characteristic do not have a limiting effect.		



<b>p0780[0...1]</b>	<b>CU analog outputs characteristic value y2 / CU AO char y2</b>				
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9572		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-20.000 [V]	20.000 [V]	20.000 [V]		
<b>Description:</b>	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 2nd value pair of the characteristic.				
<b>Index:</b>	[0] = AO0 (T 12/13) [1] = AO1 (T 26/27)				
<b>Dependency:</b>	The unit of this parameter (V or mA) depends on the analog output type. Refer to: p0776				
<b>Notice:</b>	This parameter is automatically overwritten when changing p0776 (type of analog outputs).				
<b>Note:</b>	The parameters for the characteristic do not have a limiting effect.				
<b>p0782[0...1]</b>	<b>BI: CU analog outputs invert signal source / CU AO inv S_src</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9572		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0		
<b>Description:</b>	Sets the signal source to invert the analog output signals.				
<b>Index:</b>	[0] = AO0 (T 12/13) [1] = AO1 (T 26/27)				
<b>Note:</b>	AO: Analog Output T: Terminal				
<b>r0785.0...1</b>	<b>BO: CU analog outputs status word / CU AO ZSW</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9572		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the status of analog outputs.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	AO 0 negative	Yes	No	-
	01	AO 1 negative	Yes	No	-
<b>Note:</b>	AO: Analog Output				
<b>p0795</b>	<b>CU digital inputs simulation mode / CU DI simulation</b>				
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
CU240B-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2201, 2202, 2220, 2221, 2255, 2256		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 0000 0000 0000 bin		
<b>Description:</b>	Sets the simulation mode for digital inputs.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	DI 0 (T. 5)	Simulation	Terminal eval	-
	01	DI 1 (T. 6)	Simulation	Terminal eval	-

## 2 Parameters

### 2.2 List of parameters

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

CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2201, 2202, 2220, 2221, 2255, 2256
CU240E-2_F			
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	0000 0000 0000 0000 bin

**Description:** Sets the simulation mode for digital inputs.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	DI 0 (T. 5)	Simulation	Terminal eval	-
	01	DI 1 (T. 6)	Simulation	Terminal eval	-
	02	DI 2 (T. 7)	Simulation	Terminal eval	-
	03	DI 3 (T. 8)	Simulation	Terminal eval	-
	04	DI 4 (T. 16)	Simulation	Terminal eval	-
	05	DI 5 (T. 17)	Simulation	Terminal eval	-
	11	DI 11 (T. 3, 4) AI 0	Simulation	Terminal eval	-
	12	DI 12 (T. 10, 11) AI 1	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

#### p0796

#### CU digital inputs simulation mode setpoint / CU DI simul setp

CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240B-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2201, 2202, 2220, 2221, 2255, 2256
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0000 0000 0000 0000 bin

**Description:** Sets the setpoint for the input signals in the digital input simulation mode.

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	-

**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

<b>p0796</b>		<b>CU digital inputs simulation mode setpoint / CU DI simul setp</b>			
CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2201, 2202, 2220, 2221, 2255, 2256		
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_PN_F	-	-	0000 0000 0000 0000 bin		
CU240E-2 PN					
<b>Description:</b>	Sets the setpoint for the input signals in the digital input simulation mode.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	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	-
<b>Dependency:</b>	The simulation of a digital input is selected using p0795. Refer to: p0795				
<b>Note:</b>	This parameter is not saved when data is backed up (p0971). AI: Analog Input DI: Digital Input T: Terminal				

<b>p0797[0...1]</b>		<b>CU analog inputs simulation mode / CU AI sim_mode</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0	1	0	
<b>Description:</b>	Sets the simulation mode for the analog inputs.			
<b>Value:</b>	0: Terminal evaluation for analog input x 1: Simulation for analog input x			
<b>Index:</b>	[0] = AI0 (T. 3/4) [1] = AI1 (T. 10/11)			
<b>Dependency:</b>	The setpoint for the input voltage is specified via p0798. Refer to: p0798			
<b>Note:</b>	This parameter is not saved when data is backed up (p0971). AI: Analog Input			

<b>p0798[0...1]</b>		<b>CU analog inputs simulation mode setpoint / CU AI sim setp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-50.000	2000.000	0.000	
<b>Description:</b>	Sets the setpoint for the input value in the simulation mode of the analog inputs.			
<b>Index:</b>	[0] = AI0 (T. 3/4) [1] = AI1 (T. 10/11)			
<b>Dependency:</b>	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			

## 2 Parameters

### 2.2 List of parameters

**Note:** This parameter is not saved when data is backed up (p0971).  
AI: Analog Input

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<b>p0802</b>	<b>Data transfer: memory card as source/target / mem_card src/targ</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	100	0
<b>Description:</b>	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).		
<b>Dependency:</b>	Refer to: p0803, p0804		
<b>Notice:</b>	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).		

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<b>p0803</b>	<b>Data transfer: device memory as source/target / Dev_mem src/targ</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	12	0
<b>Description:</b>	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).		
<b>Value:</b>	0: Source/target standard 10: Source/target with setting 10 11: Source/target with setting 11 12: Source/target with setting 12		
<b>Dependency:</b>	Refer to: p0802, p0804		
<b>Notice:</b>	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).		

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<b>p0804</b>	<b>Data transfer start / Data transf start</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	0	1100	0
<b>Description:</b>	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. 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 reset to 0. If an error occurs, the parameter is set to a value > 1000. Possible fault causes:

p0804 = 1001:

The parameter backup set in p0802 as the source on the memory card does not exist or there is not sufficient memory space available on the memory card.

p0804 = 1002:

The parameter backup set in p0803 as the source in the device memory does not exist or there is not sufficient memory space available in the device memory.

p0804 = 1003:

No memory card has been inserted.

**p0804****Data transfer start / Data transf start**

CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1100	0

**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.

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.

## 2 Parameters

### 2.2 List of parameters

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  
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 reset to 0. If an error occurs, the parameter is set to a value > 1000. Possible fault causes:

p0804 = 1001:

The parameter backup set in p0802 as the source on the memory card does not exist or there is not sufficient memory space available on the memory card.

p0804 = 1002:

The parameter backup set in p0803 as the source in the device memory does not exist or there is not sufficient memory space available in the device memory.

p0804 = 1003:

No memory card has been inserted.

---

**p0806**

**BI: Inhibit master control / PcCtrl inhibit**

**Access level:** 3

**Calculated:** -

**Data type:** U32 / Binary

**Can be changed:** T

**Scaling:** -

**Dyn. index:** -

**Units group:** -

**Unit selection:** -

**Func. diagram:** -

**Min**

**Max**

**Factory setting**

-

-

0

**Description:**

Sets the signal source to block the master control.

**Dependency:**

Refer to: r0807

**Note:**

The commissioning software (drive control panel) uses the master control, for example.

<b>r0807.0</b>	<b>BO: Master control active / PcCtrl active</b>			
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8	
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	-	
<b>Description:</b>	Displays what has the master control. The drive can be controlled via the BICO interconnection or from external (e.g. the commissioning software).			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	Master control active	Yes	No
				<b>FP</b>
				3030, 6031
<b>Dependency:</b>	Refer to: p0806			
<b>Notice:</b>	The master control only influences control word 1 and speed setpoint 1. Other control words/setpoints can be transferred from another automation device.			
<b>Note:</b>	Bit 0 = 0: BICO interconnection active Bit 0 = 1: Master control for PC/AOP The commissioning software (drive control panel) uses the master control, for example.			
<b>p0809[0...2]</b>	<b>Copy Command Data Set CDS / Copy CDS</b>			
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8	
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8560	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0	3	0	
<b>Description:</b>	Copies one Command Data Set (CDS) into another.			
<b>Index:</b>	[0] = Source Command Data Set [1] = Target Command Data Set [2] = Start copying procedure			
<b>Dependency:</b>	Refer to: r3996			
<b>Notice:</b>	When the command data sets are copied, short-term communication interruptions may occur.			
<b>Note:</b>	Procedure: 1. In Index 0, enter which command data set should be copied. 2. In Index 1, enter the command data set that is to be copied into. 3. Start copying: Set index 2 from 0 to 1. p0809[2] is automatically set to 0 when copying is completed.			
<b>p0810</b>	<b>BI: Command data set selection CDS bit 0 / CDS select., bit 0</b>			
CU240B-2_DP	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary	
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8560	
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_PN	-	-	722.3	
<b>Description:</b>	Sets the signal source to select the Command Data Set bit 0 (CDS bit 0).			
<b>Dependency:</b>	Refer to: r0050, p0811, r0836			
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.			
<b>Note:</b>	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.			

## 2 Parameters

### 2.2 List of parameters

<b>p0810</b>	<b>BI: Command data set selection CDS bit 0 / CDS select., bit 0</b>		
CU240B-2	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8560
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source to select the Command Data Set bit 0 (CDS bit 0).		
<b>Dependency:</b>	Refer to: r0050, p0811, r0836		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>Note:</b>	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.		
<b>p0811</b>	<b>BI: Command data set selection CDS bit 1 / CDS select., bit 1</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8560
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source to select the Command Data Set bit 1 (CDS bit 1).		
<b>Dependency:</b>	Refer to: r0050, p0810, r0836		
<b>Note:</b>	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.		
<b>p0819[0...2]</b>	<b>Copy Drive Data Set DDS / Copy DDS</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> C(15)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8565
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	3	0
<b>Description:</b>	Copies one Drive Data Set (DDS) into another.		
<b>Index:</b>	[0] = Source Drive Data Set [1] = Target Drive Data Set [2] = Start copying procedure		
<b>Dependency:</b>	Refer to: r3996		
<b>Notice:</b>	When the drive data sets are copied, short-term communication interruptions may occur.		
<b>Note:</b>	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.		
<b>p0820[0...n]</b>	<b>BI: Drive Data Set selection DDS bit 0 / DDS select., bit 0</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> C(15), T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8565
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source to select the Drive Data Set, bit 0 (DDS, bit 0).		
<b>Dependency:</b>	Refer to: r0051, p0826, r0837		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		



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<b>p0821[0...n]</b>	<b>BI: Drive Data Set selection DDS bit 1 / DDS select., bit 1</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> C(15), T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8565, 8570
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source to select the Drive Data Set, bit 1 (DDS, bit 1).		
<b>Dependency:</b>	Refer to: r0051, r0837		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		

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<b>p0826[0...n]</b>	<b>Motor changeover motor number / Mot_chng mot No.</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> C(3), T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	3	0
<b>Description:</b>	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. 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.		
<b>Note:</b>	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).		

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<b>r0835.2...8</b>	<b>CO/BO: Data set changeover status word / DDS_ZSW</b>				
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8575		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the status word for the drive data set changeover.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	02	Internal parameter calculation active	Yes	No	-
	04	Armature short circuit active	Yes	No	-
	05	Identification running	Yes	No	-
	07	Rotating measurement running	Yes	No	-
	08	Motor data identification running	Yes	No	-
<b>Note:</b>	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.				


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<b>r0836.0...1</b>	<b>CO/BO: Command Data Set CDS selected / CDS selected</b>			
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8	
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8560	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	-	
<b>Description:</b>	Displays the command data set (CDS) selected via the binector input.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	CDS select. bit 0	ON	OFF
	01	CDS select. bit 1	ON	OFF
				<b>FP</b>
				-
				-
<b>Dependency:</b>	Refer to: r0050, p0810, p0811			
<b>Note:</b>	Command data sets are selected via binector input p0810 and following. The currently effective command data set is displayed in r0050.			

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<b>r0837.0...1</b>	<b>CO/BO: Drive Data Set DDS selected / DDS selected</b>			
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8	
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8565	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	-	
<b>Description:</b>	Displays the drive data set (DDS) selected via the binector input.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	DDS select. bit 0	ON	OFF
	01	DDS select. bit 1	ON	OFF
				<b>FP</b>
				-
				-
<b>Dependency:</b>	Refer to: r0051, p0820, p0821			
<b>Note:</b>	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.			

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<b>p0840[0...n]</b>	<b>BI: ON / OFF (OFF1) / ON / OFF (OFF1)</b>			
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary	
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170	
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501, 2610, 8720, 8820, 8920	
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2 PN	-	-	[0] 2090.0	
			[1] 0	
			[2] 0	
			[3] 0	
<b>Description:</b>	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).			
<b>Recommend.:</b>	When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.			
<b>Dependency:</b>	Refer to: p1055, p1056			
<b>Caution:</b>	When "master control from PC" is activated, this binector input is ineffective.			
				
<b>Notice:</b>	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.			
<b>Note:</b>	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)

<b>p0840[0...n]</b>	<b>BI: ON / OFF (OFF1) / ON / OFF (OFF1)</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501, 2610, 8720, 8820, 8920
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	[0] 722.0
			[1] 0
			[2] 0
			[3] 0
<b>Description:</b>	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).		
<b>Recommend.:</b>	When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.		
<b>Dependency:</b>	Refer to: p1055, p1056		
<b>Caution:</b>	When "master control from PC" is activated, this binector input is ineffective.		
			
<b>Notice:</b>	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.		
<b>Note:</b>	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)		

<b>p0844[0...n]</b>	<b>BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501, 8720, 8820, 8920
CU240E-2_PN_F			
CU240E-2 PN	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	[0] 2090.1
			[1] 1
			[2] 2090.1
			[3] 2090.1
<b>Description:</b>	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).		

## 2 Parameters

### 2.2 List of parameters

- BI: p0844 = 0 signal or BI: p0845 = 0 signal  
 - OFF2 (immediate pulse suppression and switch on inhibit)  
 BI: p0844 = 1 signal and BI: p0845 = 1 signal  
 - No OFF2 (enable is possible)

**Caution:**



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

**Notice:**

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

#### p0844[0...n]

#### BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S\_src 1

CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501, 8720, 8820, 8920
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1

**Description:**

Sets the first signal source for the command "No coast down/coast down (OFF2)".  
 The following signals are AND'ed:  
 - BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"  
 - BI: p0845 "No coast-down / coast-down (OFF2) signal source 2"  
 For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).  
 BI: p0844 = 0 signal or BI: p0845 = 0 signal  
 - OFF2 (immediate pulse suppression and switch on inhibit)  
 BI: p0844 = 1 signal and BI: p0845 = 1 signal  
 - No OFF2 (enable is possible)

**Caution:**



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

**Notice:**

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

#### p0845[0...n]

#### BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S\_src 2

	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501, 8720, 8820, 8920
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	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 = 0 signal or BI: p0845 = 0 signal  
 - OFF2 (immediate pulse suppression and switch on inhibit)  
 BI: p0844 = 1 signal and BI: p0845 = 1 signal  
 - No OFF2 (enable is possible)

**Caution:**



When "master control from PC" is activated, this binector input is effective.

p0848[0...n]	BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[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 = 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.

**Note:** For drives with closed-loop torque control (activated using p1501), the following applies:  
BI: p0848 = 0 signal:  
- No dedicated braking response, but pulse suppression when standstill is detected (p1226, p1227).

p0848[0...n]	BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1


**Description:** Sets the first signal source for the command "No quick stop/quick stop (OFF3)".  
The following signals are AND'ed:  
- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"  
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"  
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).  
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.

**Note:** For drives with closed-loop torque control (activated using p1501), the following applies:  
BI: p0848 = 0 signal:  
- No dedicated braking response, but pulse suppression when standstill is detected (p1226, p1227).

<b>p0849[0...n]</b>	<b>BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	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)		
<b>Caution:</b>	When "master control from PC" is activated, this binector input is effective.		
			
<b>Note:</b>	For drives with closed-loop torque control (activated using p1501), the following applies: BI: p0849 = 0 signal: - No dedicated braking response, but pulse suppression when standstill is detected (p1226, p1227).		

<b>p0852[0...n]</b>	<b>BI: Enable operation/inhibit operation / Operation enable</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 2090.3 [1] 1 [2] 2090.3 [3] 2090.3
<b>Description:</b>	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).		
<b>Caution:</b>	When "master control from PC" is activated, this binector input is ineffective.		
			
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		

<b>p0852[0...n]</b>	<b>BI: Enable operation/inhibit operation / Operation enable</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	Sets the signal source for the command "enable operation/inhibit operation". For the PROFIdrive profile, this command corresponds to control word 1 bit 3 (STW1.3). BI: p0852 = 0 signal Inhibit operation (suppress pulses). BI: p0852 = 1 signal Enable operation (pulses can be enabled).		

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



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

p0854[0...n]	BI: Control by PLC/no control by PLC / Master ctrl by PLC		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 2090.10
			[1] 1
			[2] 2090.10
			[3] 2090.10

**Description:** Sets the signal source for the command "control by PLC/no control by PLC".  
For the PROFIdrive profile, this command corresponds to control word 1 bit 10 (STW1.10).  
BI: p0854 = 0 signal  
No control by PLC  
BI: p0854 = 1 signal  
Master control by PLC.

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



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

**Note:** This bit is used to initiate a response for the drives when the control fails (F07220). If there is no control available, then binector input p0854 should be set to 1.

If a control is available, then STW1.10 must be set to 1 (PZD1) so that the received data is updated. This applies regardless of the setting in p0854 and even in the case of free telegram configuration (p0922 = 999).

p0854[0...n]	BI: Control by PLC/no control by PLC / Master ctrl by PLC		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1

**Description:** Sets the signal source for the command "control by PLC/no control by PLC".  
For the PROFIdrive profile, this command corresponds to control word 1 bit 10 (STW1.10).  
BI: p0854 = 0 signal  
No control by PLC  
BI: p0854 = 1 signal  
Master control by PLC.

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



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

**Note:** This bit is used to initiate a response for the drives when the control fails (F07220). If there is no control available, then binector input p0854 should be set to 1.

If a control is available, then STW1.10 must be set to 1 (PZD1) so that the received data is updated. This applies regardless of the setting in p0854 and even in the case of free telegram configuration (p0922 = 999).

## 2 Parameters

### 2.2 List of parameters

<b>p0855[0...n]</b>	<b>BI: Unconditionally release holding brake / Uncond open brake</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501, 2701
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the command "unconditionally open holding brake".		
<b>Dependency:</b>	Refer to: p0858		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>Note:</b>	The signal via BI: p0858 (unconditionally close holding brake) has a higher priority than via BI: p0855 (unconditionally open holding brake).		
<b>p0856[0...n]</b>	<b>BI: Speed controller enable / n_ctrl enable</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501, 2701
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	Sets the signal source for the command "enable speed controller" (r0898.12). 0 signal: Set the I component and speed controller output to zero. 1 signal: Enable speed controller.		
<b>Dependency:</b>	Refer to: r0898		
<b>Note:</b>	If "enable speed controller" is withdrawn, then an existing brake will be closed. If "speed controller enable" is withdrawn, the pulses are not suppressed.		
<b>p0857</b>	<b>Power unit monitoring time / PU t_monit</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8760, 8864, 8964
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	100.0 [ms]	60000.0 [ms]	10000.0 [ms]
<b>Description:</b>	Sets the monitoring time for the power unit. 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.		
<b>Notice:</b>	The maximum time to pre-charge the DC link is monitored in the power unit and cannot be changed. The maximum pre-charging duration depends on the power unit. The monitoring time for the pre-charging is started after the ON command (BI: p0840 = 0/1 signal). Fault F30027 is output when the maximum pre-charging duration is exceeded.		
<b>Note:</b>	The factory setting for p0857 depends on the power unit. The monitoring time for the ready signal of the power unit includes the time to pre-charge the DC link and, if relevant, the de-bounce time of the contactors. If an excessively low value is entered into p0857, then after enable, this results in the corresponding fault.		
<b>p0858[0...n]</b>	<b>BI: Unconditionally close holding brake / Uncond close brake</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501, 2701
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the command "unconditionally close holding brake".		
<b>Dependency:</b>	Refer to: p0855		
<b>Note:</b>	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.

<b>p0860</b>	<b>BI: Line contactor feedback signal / Line contact feedb</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary		
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	863.1		
<b>Description:</b>	Sets the signal source for the feedback signal from the line contactor.				
<b>Recommend.:</b>	When the monitoring is activated (BI: p0860 not equal to r0863.1), then to control the line contactor, signal BO: r0863.1 of its own drive object should be used.				
<b>Dependency:</b>	Refer to: p0861, r0863				
<b>Notice:</b>	The line contactor monitoring is de-activated if the control signal of the particular drive object is set as the signal source for the feedback signal of the line contactor (BI: p0860 = r0863.1).				
<b>Note:</b>	The state of the line contactor is monitored depending on signal BO: r0863.1. When the monitoring is activated (BI: p0860 not equal to r0863.1), fault F07300 is then also output if the contactor is closed before it is controlled using r0863.1.				
<b>p0861</b>	<b>Line contactor monitoring time / LineContact t_mon</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32		
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	0 [ms]	5000 [ms]	100 [ms]		
<b>Description:</b>	Sets the monitoring time of the line contactor. This time starts each time that the line contactor switches (r0863.1). If a feedback signal is not received from the line contactor within the time, a message is output.				
<b>Dependency:</b>	Refer to: p0860, r0863				
<b>Note:</b>	The monitoring function is disabled for the factory setting of p0860.				
<b>r0863.1</b>	<b>CO/BO: Drive coupling status word/control word / CoupleZSW/STW</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Display and BICO output for the status word and control word of the drive coupling.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	01	Energize contactor	Yes	No	-
<b>Note:</b>	Re bit 01: Bit 1 is used to control an external line contactor.				
<b>p0867</b>	<b>Power unit main contactor holding time after OFF1 / PU t_MC after OFF1</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32		
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	0.0 [ms]	500.0 [ms]	50.0 [ms]		
<b>Description:</b>	Sets the main contactor holding time after OFF1				
<b>Dependency:</b>	Refer to: p0869				
<b>Note:</b>	After withdrawing the OFF1 enable (source of p0840), the main contactor is opened after the main contactor holding time has elapsed.				

## 2 Parameters

### 2.2 List of parameters

For p0869 = 1 (keep main contactor closed for STO), after withdrawing STO, the switch-on inhibit must be acknowledged via the source of p0840 = 0 (OFF1) – and before the main contactor holding time expires, should go back to 1, otherwise the main contactor will open.

When operating a drive connected to SINUMERIK, which only closes the main contactor with the OFF1 command (blocksize, chassis), p0867 should be set as a minimum to 50 ms.

<b>p0869</b>	<b>Sequence control configuration / Seq_ctrl config</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 bin		
<b>Description:</b>	Sets the configuration for the sequence control.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Keep main contactor closed for STO	Yes	No	-
<b>Dependency:</b>	Refer to: p0867				
<b>Note:</b>	Re bit 00: After withdrawing the OFF1 enable (source of p0840), the main contactor is opened after the main contactor holding time has elapsed. For p0869.0 = 1, after withdrawing STO, the switch-on inhibit must be acknowledged via the source of p0840 = 0 (OFF1) – and before the main contactor holding time expires (p0867), should go back to 1, otherwise the main contactor will open.				

<b>p0897</b>	<b>BI: Parking axis selection / Parking axis sel</b>			
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary	
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	0	
<b>Description:</b>	Sets the signal source to select the "parking axis" function.			
<b>Dependency:</b>	BI: p0897 = 0 signal The function "parking axis" is not selected. BI: p0897 = 1 signal The function "parking axis" is selected.			
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.			
<b>Note:</b>	After it has been selected the "parking axis" function only becomes active when the pulses are suppressed.			

<b>r0898.0...14</b>	<b>CO/BO: Control word sequence control / STW seq_ctrl</b>				
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Display and connector output for the control word of the sequence control.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	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	3001
	09	Jog 2	Yes	No	3001

10	Master ctrl by PLC	Yes	No	-
12	Speed controller enable	Yes	No	-
14	Command close brake	Yes	No	-

**Note:** OC: Operating condition

### r0899.0...13 CO/BO: Status word sequence control / ZSW seq\_ctrl

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2503
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Display and BICO output for the status word of the sequence control.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Rdy for switch on	Yes	No	-
	01	Ready	Yes	No	-
	02	Operation enabled	Yes	No	-
	03	Jog active	Yes	No	-
	04	No coasting active	OFF2 inactive	OFF2 active	-
	05	No Quick Stop active	OFF3 inactive	OFF3 active	-
	06	Switching on inhibited active	Yes	No	-
	07	Drive ready	Yes	No	-
	08	Controller enable	Yes	No	-
	09	Control request	Yes	No	-
	11	Pulses enabled	Yes	No	-
	12	Open holding brake	Yes	No	-
	13	Command close holding brake	Yes	No	-

**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

CU240B-2_DP	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2401, 2410
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	126	126

**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.

<b>p0922</b>	<b>PROFIdrive PZD telegram selection / PZD telegr_sel</b>		
CU240B-2_DP	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2_DP	<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2401, 2420
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN	1	999	1
<b>Description:</b>	Sets the send and receive telegram.		
<b>Value:</b>	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		
<b>Dependency:</b>	Refer to: p2038		
<b>Note:</b>	For p0922 = 100 ... 199, p2038 is automatically set to 1 and p2038 can no longer be changed. This means that for these telegrams, the "SIMODRIVE 611 universal" interface mode is set and cannot be changed. If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited. The inhibited interconnections can only be changed again after setting value 999.		
<b>r0944</b>	<b>CO: Counter for fault buffer changes / Fault buff change</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays fault buffer changes. This counter is incremented every time the fault buffer changes.		
<b>Recommend.:</b>	Used to check whether the fault buffer has been read out consistently.		
<b>Dependency:</b>	Refer to: r0945, r0947, r0948, r0949, r2109		
<b>r0945[0...63]</b>	<b>Fault code / Fault code</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the numbers of faults that have occurred.		
<b>Dependency:</b>	Refer to: r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3120, r3122		
<b>Notice:</b>	The properties of the fault buffer should be taken from the corresponding product documentation.		
<b>Note:</b>	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		

<b>r0946[0...65534]</b>	<b>Fault code list / Fault code list</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Lists the fault codes stored in the drive unit. The indices can only be accessed with a valid fault code.		
<b>Dependency:</b>	The parameter assigned to the fault code is entered in r0951 under the same index.		
<b>r0947[0...63]</b>	<b>Fault number / Fault number</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	This parameter is identical to r0945.		
<b>r0948[0...63]</b>	<b>Fault time received in milliseconds / t_fault rcv ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ms]	- [ms]	- [ms]
<b>Description:</b>	Displays the system runtime in milliseconds when the fault occurred.		
<b>Dependency:</b>	Refer to: r0945, r0947, r0949, r2109, r2130, r2133, r2136		
<b>Notice:</b>	The time comprises r2130 (days) and r0948 (milliseconds).		
<b>Note:</b>	The buffer parameters are cyclically updated in the background (refer to status signal in r2139). The structure of the fault buffer and the assignment of the indices is shown in r0945. When the parameter is read via PROFIdrive, the TimeDifference data type applies.		
<b>r0949[0...63]</b>	<b>Fault value / Fault value</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays additional information about the fault that occurred (as integer number).		
<b>Dependency:</b>	Refer to: r0945, r0947, r0948, r2109, r2130, r2133, r2136, r3120, r3122		
<b>Note:</b>	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.		
<b>p0952</b>	<b>Fault cases counter / Fault cases qty</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6700, 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	65535	0
<b>Description:</b>	Number of fault situations that have occurred since the last reset.		
<b>Dependency:</b>	The fault buffer is deleted (cleared) by setting p0952 to 0. Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136		

## 2 Parameters

### 2.2 List of parameters

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<b>r0963</b>	<b>PROFIBUS baud rate / PB baud rate</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	-
<b>Description:</b>	Displays the corresponding value for the PROFIBUS baud rate.		
<b>Value:</b>	0: 9.6 kbit/s 1: 19.2 kbit/s 2: 93.75 kbit/s 3: 187.5 kbit/s 4: 500 kbit/s 6: 1.5 Mbit/s 7: 3 Mbit/s 8: 6 Mbit/s 9: 12 Mbit/s 10: 31.25 kbit/s 11: 45.45 kbit/s 255: Unknown		

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<b>r0964[0...6]</b>	<b>Device identification / Device ident</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the device identification.		
<b>Index:</b>	[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		
<b>Note:</b>	Example: r0964[0] = 42 --> SIEMENS r0964[1] = device type, see below r0964[2] = 403 --> first part of the firmware version V04.03 (for second part, refer to index 6) r0964[3] = 2010 --> year 2010 r0964[4] = 1705 --> 17th of May r0964[5] = 2 --> 2 drive objects r0964[6] = 200 --> second part, firmware version (complete version: V04.03.02.00) 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		

<b>r0965</b>	<b>PROFIdrive profile number / PD profile number</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	-
<b>Description:</b>	Displays the PROFIdrive profile number and profile version. Constant value = 0329 hex. Byte 1: Profile number = 03 hex = PROFIdrive profile Byte 2: Profile version = 29 hex = Version 4.1		
<b>Note:</b>	When the parameter is read via PROFIdrive, the Octet String 2 data type applies.		
<b>p0969</b>	<b>System runtime relative / t_System relative</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	4294967295 [ms]	0 [ms]
<b>Description:</b>	Displays the system runtime in ms since the last POWER ON.		
<b>Note:</b>	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.		
<b>p0970</b>	<b>Reset drive parameters / Drive par reset</b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> C(1, 30)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	300	0
<b>Description:</b>	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).		
<b>Value:</b>	0: Inactive 1: Start a parameter reset 3: Start download of volatile parameters from RAM 5: Starts a safety parameter reset 10: Start loading the parameters saved with p0971=10 11: Start loading the parameters saved with p0971=11 12: Start loading the parameters saved with p0971=12 100: Start a BICO interconnection reset 300: Only Siemens int		
<b>Notice:</b>	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. 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). 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.		
<b>Note:</b>	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 is completed with p0970 = 0 and r3996[0] = 0. For p0970 = 5 the following applies: The password for Safety Integrated must be set.		

When Safety Integrated is enabled, this can result in messages, which then require an acceptance test to be performed.

Then save the parameters and carry out a POWER ON.

For p0970 = 1 the following applies:

If a Safety Integrated function is parameterized (p9601), then the safety parameters are not reset. In this case, a fault (F01659) is output with fault value 2.

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**

<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	12	0

**Description:**

Setting to save parameters in the non-volatile memory.  
When saving, only the adjustable parameters intended to be saved are taken into account.

**Value:**

- 0: Inactive
- 1: Save drive object
- 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: p0970, p1960, r3996

**Caution:**

If a memory card (optional) is inserted – and the USB interface is not used, the following applies:  
The parameters are also saved on the card and therefore overwrite any existing data!



**Notice:**

The Control Unit power supply may only be powered down after data has been saved (i.e. after data save has been started, wait until the parameter again has the value 0).  
Writing to parameters is inhibited while saving.  
The progress while saving is displayed in r3996.

**Note:**

Parameters saved with p0971 = 10, 11, 12 can be loaded again with p0970 = 10, 11 or 12.  
Identification and maintenance data (I&M data, p8806 and following) are only saved for p0971 = 1.

**p0972**

**Drive unit reset / Drv\_unit reset**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	3	0

**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 following:

p0972 = 0? --> The reset was successfully executed.

p0972 > 0? --> The reset was not executed.

<b>r0980[0...299]</b>	<b>List of existing parameters 1 / List avail par 1</b>		
<b>Access level:</b>	4	<b>Calculated:</b>	-
<b>Can be changed:</b>	-	<b>Scaling:</b>	-
<b>Units group:</b>	-	<b>Unit selection:</b>	-
<b>Min</b>	-	<b>Max</b>	-
		<b>Data type:</b>	Unsigned16
		<b>Dyn. index:</b>	-
		<b>Func. diagram:</b>	-
		<b>Factory setting</b>	-
<b>Description:</b>	Displays the parameters that exist for this drive.		
<b>Dependency:</b>	Refer to: r0981, r0989		
<b>Note:</b>	<p>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.</p> <p>This list consists solely of the following parameters: r0980[0...299], r0981[0...299] ... r0989[0...299]</p> <p>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>		
<b>r0981[0...299]</b>	<b>List of existing parameters 2 / List avail par 2</b>		
<b>Access level:</b>	4	<b>Calculated:</b>	-
<b>Can be changed:</b>	-	<b>Scaling:</b>	-
<b>Units group:</b>	-	<b>Unit selection:</b>	-
<b>Min</b>	-	<b>Max</b>	-
		<b>Data type:</b>	Unsigned16
		<b>Dyn. index:</b>	-
		<b>Func. diagram:</b>	-
		<b>Factory setting</b>	-
<b>Description:</b>	Displays the parameters that exist for this drive.		
<b>Dependency:</b>	Refer to: r0980, r0989		
<b>Note:</b>	<p>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.</p> <p>This list consists solely of the following parameters: r0980[0...299], r0981[0...299] ... r0989[0...299]</p> <p>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>		
<b>r0989[0...299]</b>	<b>List of existing parameters 10 / List avail par 10</b>		
<b>Access level:</b>	4	<b>Calculated:</b>	-
<b>Can be changed:</b>	-	<b>Scaling:</b>	-
<b>Units group:</b>	-	<b>Unit selection:</b>	-
<b>Min</b>	-	<b>Max</b>	-
		<b>Data type:</b>	Unsigned16
		<b>Dyn. index:</b>	-
		<b>Func. diagram:</b>	-
		<b>Factory setting</b>	-
<b>Description:</b>	Displays the parameters that exist for this drive.		
<b>Dependency:</b>	Refer to: r0980, r0981		
<b>Note:</b>	<p>The existing parameters are displayed in indices 0 to 298. If an index contains the value 0, then the list ends here.</p> <p>This list consists solely of the following parameters: r0980[0...299], r0981[0...299] ... r0989[0...299]</p> <p>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>		

<b>r0990[0...99]</b>	<b>List of modified parameters 1 / List chang par 1</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays those parameters with a value other than the factory setting for this drive.		
<b>Dependency:</b>	Refer to: r0991, r0999		
<b>Note:</b>	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).		
<b>r0991[0...99]</b>	<b>List of modified parameters 2 / List chang par 2</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays those parameters with a value other than the factory setting for this drive.		
<b>Dependency:</b>	Refer to: r0990, r0999		
<b>Note:</b>	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).		
<b>r0999[0...99]</b>	<b>List of modified parameters 10 / List chang par 10</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays those parameters with a value other than the factory setting for this drive.		
<b>Dependency:</b>	Refer to: r0990, r0991		
<b>Note:</b>	Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here. This list consists solely of the following parameters: r0990[0...99], r0991[0...99] ... r0999[0...99] The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).		
<b>p1000[0...n]</b>	<b>Speed setpoint selection / n_set sel</b>		
CU240B-2	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	200	2
<b>Description:</b>	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.

<b>Value:</b>	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



**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.

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

## p1000[0...n]

### Speed setpoint selection / n\_set sel

CU240B-2\_DP

**Access level:** 1

**Calculated:** -

**Data type:** Integer16

**Can be changed:** T

**Scaling:** -

**Dyn. index:** CDS, p0170

**Units group:** -

**Unit selection:** -

**Func. diagram:** -

**Min**

**Max**

**Factory setting**

0

200

6

**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



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

**p1000[0...n]**

**Speed setpoint selection / n\_set sel**

CU240E-2_DP	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2_DP_F	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2 PN	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	200	6

**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
- 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 + 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

**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.

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

### p1000[0...n]

### Speed setpoint selection / n\_set sel

CU240E-2

**Access level:** 1

**Calculated:** -

**Data type:** Integer16

CU240E-2\_F

**Can be changed:** T

**Scaling:** -

**Dyn. index:** CDS, p0170

**Units group:** -

**Unit selection:** -

**Func. diagram:** -

**Min**

**Max**

**Factory setting**

0

200

2

**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
- 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 + 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



**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.

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

**p1001[0...n]**

**CO: Fixed speed setpoint 1 / n\_set\_fixed 1**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

**Description:** Setting and connector output for fixed speed 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**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

**Description:** Setting and connector output for fixed speed 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.

<b>p1003[0...n]</b>	<b>CO: Fixed speed setpoint 3 / n_set_fixed 3</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 3.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p1004[0...n]</b>	<b>CO: Fixed speed setpoint 4 / n_set_fixed 4</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 4.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p1005[0...n]</b>	<b>CO: Fixed speed setpoint 5 / n_set_fixed 5</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 5.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p1006[0...n]</b>	<b>CO: Fixed speed setpoint 6 / n_set_fixed 6</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 6.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p1007[0...n]</b>	<b>CO: Fixed speed setpoint 7 / n_set_fixed 7</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 7.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		

<b>p1008[0...n]</b>	<b>CO: Fixed speed setpoint 8 / n_set_fixed 8</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 8.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p1009[0...n]</b>	<b>CO: Fixed speed setpoint 9 / n_set_fixed 9</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 9.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p1010[0...n]</b>	<b>CO: Fixed speed setpoint 10 / n_set_fixed 10</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 10.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p1011[0...n]</b>	<b>CO: Fixed speed setpoint 11 / n_set_fixed 11</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 11.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p1012[0...n]</b>	<b>CO: Fixed speed setpoint 12 / n_set_fixed 12</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 12.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		



<b>p1013[0...n]</b>	<b>CO: Fixed speed setpoint 13 / n_set_fixed 13</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 13.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p1014[0...n]</b>	<b>CO: Fixed speed setpoint 14 / n_set_fixed 14</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 14.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p1015[0...n]</b>	<b>CO: Fixed speed setpoint 15 / n_set_fixed 15</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Setting and connector output for fixed speed setpoint 15.		
<b>Dependency:</b>	Refer to: p1020, p1021, p1022, p1023, r1024, r1197		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p1016</b>	<b>Fixed speed setpoint select mode / n_set_fix select</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3010, 3011
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	2	1
<b>Description:</b>	Sets the mode to select the fixed speed setpoint.		
<b>Value:</b>	1: Direct 2: Binary		
<b>Note:</b>	Re p1016 = 1: In this mode, the setpoint is entered via the fixed speed setpoints p1001 ... p1004. Up to 16 different setpoints are obtained by adding the individual fixed speed setpoints. Re p1016 = 2: In this mode, the setpoint is entered via the fixed speed setpoints p1001 ... p1015.		
<b>p1020[0...n]</b>	<b>BI: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2505, 3010, 3011
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for selecting the fixed speed setpoint.		

## 2 Parameters

### 2.2 List of parameters

**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).

---

**p1021[0...n]**      **BI: Fixed speed setpoint selection Bit 1 / n\_set\_fixed Bit 1**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2505, 3010, 3011
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	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: p1020, p1022, p1023, r1197

**Note:** If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

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**p1022[0...n]**      **BI: Fixed speed setpoint selection Bit 2 / n\_set\_fixed Bit 2**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2505, 3010, 3011
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	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: p1020, p1021, p1023, r1197

**Note:** If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

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**p1023[0...n]**      **BI: Fixed speed setpoint selection Bit 3 / n\_set\_fixed Bit 3**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2505, 3010, 3011
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	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: 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**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3001, 3010, 3011
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [rpm]	- [rpm]	- [rpm]

**Description:** Display and connector output for the selected and active 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).

**Recommend.:** Interconnect the signal with the main setpoint (CI: p1070 = r1024).  
**Dependency:** Selects the required fixed speed setpoint using p1020 ... p1023.  
 Displays the number of the actual fixed speed setpoint in r1197.  
 Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.  
 Refer to: p1070, r1197

**Note:** If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

---

### r1025.0 **BO: Fixed speed setpoint status / n\_setp\_fix status**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Display and binector output for the status when selecting the fixed speed setpoints.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Fixed speed setpoint selected	Yes	No	3011

**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**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3020
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	0000 0110 bin

**Description:** Sets the configuration for the motorized potentiometer.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Data save active	Yes	No	-
	01	Automatic mode ramp-function generator active	Yes	No	-
	02	Initial rounding-off active	Yes	No	-
	03	Save in NVRAM active	Yes	No	-
	04	Ramp-function generator always active	Yes	No	-

**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:

$$r = 0.01 \% * p1082 [1/s] / 0.13^2 [s^2]$$

## 2 Parameters

### 2.2 List of parameters

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  $r1050$ .

---

<b>p1035[0...n]</b>	<b>BI: Motorized potentiometer setpoint raise / Mop raise</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2505, 3020
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 2090.13
			[1] 0
			[2] 0
			[3] 0

**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.

---

<b>p1035[0...n]</b>	<b>BI: Motorized potentiometer setpoint raise / Mop raise</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2505, 3020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**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.

---

<b>p1036[0...n]</b>	<b>BI: Motorized potentiometer lower setpoint / Mop lower</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2505, 3020
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 2090.14
			[1] 0
			[2] 0
			[3] 0

**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.

<b>p1036[0...n]</b>	<b>BI: Motorized potentiometer lower setpoint / Mop lower</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2505, 3020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	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).		
<b>Dependency:</b>	Refer to: p1035		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>p1037[0...n]</b>	<b>Motorized potentiometer maximum speed / MotP n_max</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Sets the maximum speed/velocity for the motorized potentiometer.		
<b>Note:</b>	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).		
<b>p1038[0...n]</b>	<b>Motorized potentiometer minimum speed / MotP n_min</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Sets the minimum speed/velocity for the motorized potentiometer.		
<b>Note:</b>	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).		
<b>p1039[0...n]</b>	<b>BI: Motorized potentiometer inversion / MotP inv</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source to invert the minimum speed/velocity or the maximum speed/velocity for the motorized potentiometer.		
<b>Dependency:</b>	Refer to: p1037, p1038		
<b>Note:</b>	The inversion is only active during "motorized potentiometer raise" or "motorized potentiometer lower".		
<b>p1040[0...n]</b>	<b>Motorized potentiometer starting value / Mop start value</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Sets the starting value for the motorized potentiometer. This starting value becomes effective after the drive has been powered up.		

## 2 Parameters

### 2.2 List of parameters

**Dependency:** Only effective if p1030.0 = 0.  
Refer to: p1030

---

<b>p1041[0...n]</b>	<b>BI: Motorized potentiometer manual/automatic / Mop manual/auto</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary	
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3020	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	0	

**Description:** Sets the signal source to change over from manual to automatic when using a motorized potentiometer. In the manual mode, the setpoint is changed using two signals - raise and lower. In the automatic mode, the setpoint must be interconnected via a connector input.

**Dependency:** Refer to: p1030, p1035, p1036, p1042

**Note:** The effectiveness of the internal ramp-function generator can be set in automatic mode.

---

<b>p1042[0...n]</b>	<b>CI: Motorized potentiometer automatic setpoint / Mop auto setpoint</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32	
<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3020	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	0	

**Description:** Sets the signal source for the setpoint of the motorized potentiometer in the automatic mode.

**Dependency:** Refer to: p1041

---

<b>p1043[0...n]</b>	<b>BI: Motorized potentiometer accept setting value / MotP acc set val</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary	
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3020	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	0	

**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).

---

<b>p1044[0...n]</b>	<b>CI: Motorized potentiometer setting value / Mop set val</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32	
<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3020	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	0	

**Description:** Sets the signal source for the setting value for the motorized potentiometer.

**Dependency:** Refer to: p1043

**Note:** The setting value (CI: p1044) becomes effective for a 0/1 edge of the setting command (BI: p1043).

---

<b>r1045</b>	<b>CO: Mot. potentiometer speed setp. in front of ramp-fct. gen. / Mop n_set bef RFG</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -	
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3020	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [rpm]	- [rpm]	- [rpm]	

**Description:** Sets the effective setpoint in front of the internal motorized potentiometer ramp-function generator.

<b>p1047[0...n]</b>	<b>Motorized potentiometer ramp-up time / Mop ramp-up time</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	1000.000 [s]	10.000 [s]
<b>Description:</b>	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).		
<b>Dependency:</b>	Refer to: p1030, p1048, p1082		
<b>Note:</b>	When the initial rounding-off is activated (p1030.2) the ramp-up time is correspondingly extended.		
<b>p1048[0...n]</b>	<b>Motorized potentiometer ramp-down time / Mop ramp-down time</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	1000.000 [s]	10.000 [s]
<b>Description:</b>	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).		
<b>Dependency:</b>	Refer to: p1030, p1047, p1082		
<b>Note:</b>	The deceleration time is extended corresponding to the activated initial rounding-off (p1030.2).		
<b>r1050</b>	<b>CO: Motor. potentiometer setpoint after the ramp-function generator / Mop setp after RFG</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3001, 3020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	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).		
<b>Recommend.:</b>	Interconnect the signal with main setpoint (p1070).		
<b>Dependency:</b>	Refer to: p1070		
<b>Note:</b>	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).		
<b>p1051[0...n]</b>	<b>CI: Speed limit RFG positive direction of rotation / n_limit RFG pos</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
CU240B-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
CU240E-2	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3050
CU240E-2_DP	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	1083[0]
<b>Description:</b>	Sets the signal source for the speed limit of the positive direction on the ramp-function generator input.		
<b>Note:</b>	The OFF3 ramp-down time (p1135) is effective when the limit is reduced.		

## 2 Parameters

### 2.2 List of parameters

<b>p1051[0...n]</b>	<b>CI: Speed limit RFG positive direction of rotation / n_limit RFG pos</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	9733[0]
<b>Description:</b>	Sets the signal source for the speed limit of the positive direction on the ramp-function generator input.		
<b>Note:</b>	The OFF3 ramp-down time (p1135) is effective when the limit is reduced.		
<b>p1052[0...n]</b>	<b>CI: Speed limit RFG negative direction of rotation / n_limit RFG neg</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
CU240B-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
CU240E-2	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3050
CU240E-2_DP	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN	-	-	1086[0]
<b>Description:</b>	Sets the signal source for the speed limit of the negative direction on the ramp-function generator input.		
<b>Note:</b>	The OFF3 ramp-down time (p1135) is effective when the limit is reduced.		
<b>p1052[0...n]</b>	<b>CI: Speed limit RFG negative direction of rotation / n_limit RFG neg</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	9733[1]
<b>Description:</b>	Sets the signal source for the speed limit of the negative direction on the ramp-function generator input.		
<b>Note:</b>	The OFF3 ramp-down time (p1135) is effective when the limit is reduced.		
<b>p1055[0...n]</b>	<b>BI: Jog bit 0 / Jog bit 0</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501, 3030
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN	-	-	[0] 0
			[1] 722.0
			[2] 0
			[3] 0
<b>Description:</b>	Sets the signal source for jog 1.		
<b>Recommend.:</b>	When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.		
<b>Dependency:</b>	Refer to: p0840, p1058		
<b>Notice:</b>	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.		
<b>p1055[0...n]</b>	<b>BI: Jog bit 0 / Jog bit 0</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501, 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for jog 1.		



**Recommend.:** When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.

**Dependency:** Refer to: 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.

---

<b>p1056[0...n]</b>	<b>BI: Jog bit 1 / Jog bit 1</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501, 3030
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 0
			[1] 722.1
			[2] 0
			[3] 0

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

**Recommend.:** When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.

**Dependency:** Refer to: 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.

---

<b>p1056[0...n]</b>	<b>BI: Jog bit 1 / Jog bit 1</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501, 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

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

**Recommend.:** When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.

**Dependency:** Refer to: 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.

---

<b>p1058[0...n]</b>	<b>Jog 1 speed setpoint / Jog 1 n_set</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3001, 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	150.000 [rpm]

**Description:** Sets the speed for jog 1.  
Jogging (JOG) is level-triggered, and allows the motor to be incrementally traversed.

**Dependency:** Refer to: p1055, p1056

## 2 Parameters

### 2.2 List of parameters

<b>p1059[0...n]</b>	<b>Jog 2 speed setpoint / Jog 2 n_set</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3001, 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	210000.000 [rpm]	-150.000 [rpm]
<b>Description:</b>	Sets the speed for jog 2. Jogging (JOG) is level-triggered, and allows the motor to be incrementally traversed.		
<b>Dependency:</b>	Refer to: p1055, p1056		
<b>p1063[0...n]</b>	<b>Speed limit setpoint channel / n_limit setp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3040
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [rpm]	210000.000 [rpm]	210000.000 [rpm]
<b>Description:</b>	Sets the speed limit/velocity limit effective in the setpoint channel.		
<b>Dependency:</b>	Refer to: p1082, p1083, p1085, p1086, p1088		
<b>p1070[0...n]</b>	<b>CI: Main setpoint / Main setpoint</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3001, 3030
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 2050[1] [1] 0 [2] 0 [3] 0
<b>Description:</b>	Sets the signal source for the main setpoint. Examples: r1024: Fixed speed setpoint effective r1050: Motor. potentiometer setpoint after the ramp-function generator		
<b>Dependency:</b>	Refer to: p1071, r1073, r1078		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>p1070[0...n]</b>	<b>CI: Main setpoint / Main setpoint</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3001, 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	[0] 755[0] [1] 0 [2] 0 [3] 0
<b>Description:</b>	Sets the signal source for the main setpoint. Examples: r1024: Fixed speed setpoint effective r1050: Motor. potentiometer setpoint after the ramp-function generator		
<b>Dependency:</b>	Refer to: p1071, r1073, r1078		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		

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<b>p1071[0...n]</b>	<b>CI: Main setpoint scaling / Main setp scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3001, 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1

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

---

<b>r1073</b>	<b>CO: Main setpoint effective / Main setpoint eff</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]

**Description:** Displays the effective main setpoint.  
The value shown is the main setpoint after scaling.

---

<b>p1075[0...n]</b>	<b>CI: Supplementary setpoint / Suppl setp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3001, 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

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

**Dependency:** Refer to: p1076, r1077, r1078

---

<b>p1076[0...n]</b>	<b>CI: Supplementary setpoint scaling / Suppl setp scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3001, 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1

**Description:** Sets the signal source for scaling the supplementary setpoint.

---

<b>r1077</b>	<b>CO: Supplementary setpoint effective / Suppl setpoint eff</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]

**Description:** Displays the effective supplementary setpoint. The value shown is the additional setpoint after scaling.

---

<b>r1078</b>	<b>CO: Total setpoint effective / Total setpoint eff</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]

**Description:** Displays the total effective setpoint.  
The value indicates the sum of the effective main setpoint and supplementary setpoint.

## 2 Parameters

### 2.2 List of parameters

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<b>p1080[0...n]</b>	<b>Minimum speed / n_min</b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3050, 8020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [rpm]	19500.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Sets the lowest possible motor speed. This value is not undershot in operation.		
<b>Dependency:</b>	Refer to: p1106		
<b>Notice:</b>	The effective minimum speed is formed from p1080 and p1106.		
<b>Note:</b>	The parameter value applies for both motor directions. In exceptional cases, the motor can operate below this value (e.g. when reversing).		

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<b>p1081</b>	<b>Maximum speed scaling / n_max scal</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3050, 3095
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	100.00 [%]	105.00 [%]	100.00 [%]
<b>Description:</b>	Sets the scaling for the maximum speed (p1082). For a higher-level speed control, this scaling allows the maximum speed to be briefly exceeded.		
<b>Dependency:</b>	Refer to: p1082		
<b>Notice:</b>	Continuous operation above a scaling of 100 % is not permitted.		

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<b>p1082[0...n]</b>	<b>Maximum speed / n_max</b>		
	<b>Access level:</b> 1	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3020, 3050, 3060, 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [rpm]	210000.000 [rpm]	1500.000 [rpm]
<b>Description:</b>	Sets the highest possible speed. Example: Induction motor p0310 = 50 / 60 Hz without output filter and Blocksize power unit p1082 <= 60 x 240 Hz / r0313 (vector control) p1082 <= 60 x 550 Hz / r0313 (U/f control)		
<b>Dependency:</b>	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		
<b>Notice:</b>	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.		
<b>Note:</b>	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). The parameter is part of the quick commissioning (p0010 = 1); this means that it is appropriately pre-assigned when changing p0310, p0311, p0322.		

The following limits are always effective for p1082:

$p1082 \leq 60 \times \text{minimum} (15 \times r0310, 550 \text{ Hz}) / r0313$

$p1082 \leq 60 \times \text{maximum power unit pulse frequency} / (k \times r0313)$ , with  $k = 12$  (vector control),  $k = 6.5$  (U/f control)

During automatic calculation ( $p0340 = 1$ ,  $p3900 > 0$ ), the parameter value is assigned the maximum motor speed ( $p0322$ ). For  $p0322 = 0$  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 ( $p0310 \times 60 / r0313$ ).

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.

<b>p1083[0...n]</b>	<b>CO: Speed limit in positive direction of rotation / n_limit pos</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [rpm]	210000.000 [rpm]	210000.000 [rpm]
<b>Description:</b>	Sets the maximum speed for the positive direction.		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>r1084</b>	<b>CO: Speed limit positive effective / n_limit pos eff</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3050, 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	Display and connector output for the active positive speed limit.		
<b>Dependency:</b>	Refer to: p1082, p1083, p1085		
<b>p1085[0...n]</b>	<b>CI: Speed limit in positive direction of rotation / n_limit pos</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1083[0]
<b>Description:</b>	Sets the signal source for the speed limit of the positive direction.		
<b>p1086[0...n]</b>	<b>CO: Speed limit in negative direction of rotation / n_limit neg</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-210000.000 [rpm]	0.000 [rpm]	-210000.000 [rpm]
<b>Description:</b>	Sets the speed limit for the negative direction.		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>r1087</b>	<b>CO: Speed limit negative effective / n_limit neg eff</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3050, 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	Display and connector output for the active negative speed limit.		

## 2 Parameters

### 2.2 List of parameters

**Dependency:** Refer to: p1082, p1086, p1088

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<b>p1088[0...n]</b>	<b>Cl: Speed limit in negative direction of rotation / n_limit neg</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32	
<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3050	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	1086[0]	

**Description:** Sets the signal source for the speed/velocity limit of the negative direction.

---

<b>p1091[0...n]</b>	<b>Skip speed 1 / n_skip 1</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3050	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.000 [rpm]	210000.000 [rpm]	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.

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<b>p1092[0...n]</b>	<b>Skip speed 2 / n_skip 2</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3050	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.000 [rpm]	210000.000 [rpm]	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.

---

<b>p1093[0...n]</b>	<b>Skip speed 3 / n_skip 3</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3050	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.000 [rpm]	210000.000 [rpm]	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.

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<b>p1094[0...n]</b>	<b>Skip speed 4 / n_skip 4</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3050	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.000 [rpm]	210000.000 [rpm]	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.

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<b>p1098[0...n]</b>	<b>CI: Skip speed scaling / n_skip scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	Sets the signal source for scaling the skip speeds.		
<b>Dependency:</b>	Refer to: p1091, p1092, p1093, p1094		

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<b>r1099.0</b>	<b>CO/BO: Skip band status word / Skip band ZSW</b>			
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32	
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	-	
<b>Description:</b>	Display and BICO output for the skip bands.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	r1170 within the skip band	Yes	No
				<b>FP</b> 3050
<b>Dependency:</b>	Refer to: r1170			
<b>Note:</b>	Re bit 00: With the bit set, the setpoint speed is within the skip band after the ramp-function generator (r1170). The signal can be used to switch over the drive data set (DDS).			

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<b>p1101[0...n]</b>	<b>Skip speed bandwidth / n_skip bandwidth</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]
<b>Description:</b>	Sets the bandwidth for the skip speeds/velocities 1 to 4.		
<b>Dependency:</b>	Refer to: p1091, p1092, p1093, p1094		
<b>Note:</b>	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]		

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<b>p1106[0...n]</b>	<b>CI: Minimum speed signal source / n_min s_src</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for lowest possible motor speed.		
<b>Dependency:</b>	Refer to: p1080		
<b>Notice:</b>	The effective minimum speed is formed from p1080 and p1106.		


<b>p1108[0...n]</b>	<b>BI: Total setpoint selection / Total setp sel</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**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).  


<b>p1109[0...n]</b>	<b>CI: Total setpoint / Total setp</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**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).  




<b>p1110[0...n]</b>	<b>BI: Inhibit negative direction / Inhib neg dir</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2505, 3040
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**Description:** Sets the signal source to disable the negative direction.  
**Dependency:** Refer to: p1111


<b>p1111[0...n]</b>	<b>BI: Inhibit positive direction / Inhib pos dir</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2505, 3040
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**Description:** Sets the signal source to disable the positive direction.  
**Dependency:** Refer to: p1110



<b>r1112</b>	<b>CO: Speed setpoint after minimum limiting / n_set aft min_lim</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	Displays the speed setpoint after the minimum limiting.		
<b>Dependency:</b>	Refer to: p1091, p1092, p1093, p1094, p1101		
<b>p1113[0...n]</b>	<b>BI: Setpoint inversion / Setp inv</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2441, 2442, 2505, 3040
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 2090.11
			[1] 0
			[2] 0
			[3] 0
<b>Description:</b>	Sets the signal source to invert the setpoint.		
<b>Dependency:</b>	Refer to: r1198		
<b>Caution:</b>	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.		
			
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>p1113[0...n]</b>	<b>BI: Setpoint inversion / Setp inv</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2441, 2442, 2505, 3040
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	[0] 722.1
			[1] 0
			[2] 0
			[3] 0
<b>Description:</b>	Sets the signal source to invert the setpoint.		
<b>Dependency:</b>	Refer to: r1198		
<b>Caution:</b>	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.		
			
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>r1114</b>	<b>CO: Setpoint after the direction limiting / Setp after limit</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3001, 3040, 3050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	Displays the speed/velocity setpoint after the changeover and limiting the direction.		

<b>p1115</b>	<b>Ramp-function generator selection / RFG selection</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3001, 3080
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	1
<b>Description:</b>	Sets the ramp-function generator type.		
<b>Value:</b>	0: Basic ramp-function generator 1: Extended ramp-function generator		
<b>Note:</b>	Another ramp-function generator type can only be selected when the motor is at a standstill.		
<b>r1119</b>	<b>CO: Ramp-function generator setpoint at the input / RFG setp at inp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3001, 3050, 3060, 3070, 6300
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	Displays the setpoint at the input of the ramp-function generator.		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>Note:</b>	The setpoint is influenced by other functions, e.g. skip (suppressed) speeds, minimum and maximum limits.		
<b>p1120[0...n]</b>	<b>Ramp-function generator ramp-up time / RFG ramp-up time</b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3060, 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	999999.000 [s]	10.000 [s]
<b>Description:</b>	The ramp-function generator ramps-up the speed setpoint from standstill (setpoint = 0) up to the maximum speed (p1082) in this time.		
<b>Dependency:</b>	Refer to: p1082, p1123		
<b>Note:</b>	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), a ramp-up time of 0 s is not expedient. The setting should be based on the startup times (r0345) of the motor.		
<b>p1121[0...n]</b>	<b>Ramp-function generator ramp-down time / RFG ramp-down time</b>		
PM230	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3060, 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	999999.000 [s]	30.000 [s]
<b>Description:</b>	Sets the ramp-down time for the ramp-function generator. The ramp-function generator ramps-down the speed setpoint from the maximum speed (p1082) down to standstill (setpoint = 0) in this time. Further, the ramp-down time is always effective for OFF1.		
<b>Dependency:</b>	The parameter is pre-assigned depending on the size of the power unit. Refer to: p1082, p1123		
<b>Note:</b>	For U/f control and sensorless vector control (see p1300), a ramp-down time of 0 s is not expedient. The setting should be based on the startup times (r0345) of the motor.		

<b>p1121[0...n]</b>	<b>Ramp-function generator ramp-down time / RFG ramp-down time</b>		
PM240	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250, PM260	<b>Can be changed:</b> C(1), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3060, 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	999999.000 [s]	10.000 [s]
<b>Description:</b>	Sets the ramp-down time for the ramp-function generator. The ramp-function generator ramps-down the speed setpoint from the maximum speed (p1082) down to standstill (setpoint = 0) in this time. Further, the ramp-down time is always effective for OFF1.		
<b>Dependency:</b>	Refer to: p1082, p1123		
<b>Note:</b>	For U/f control and sensorless vector control (see p1300), a ramp-down time of 0 s is not expedient. The setting should be based on the startup times (r0345) of the motor.		
<b>p1122[0...n]</b>	<b>BI: Bypass ramp-function generator / Bypass RFG</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2505
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for bypassing the ramp generator (ramp-up and ramp-down times = 0).		
<b>Caution:</b>	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).		
			
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>Note:</b>	In the case of sensorless vector control, the ramp-function generator must not be bypassed, other than indirectly by means of interconnection with r2349.		
<b>p1123[0...n]</b>	<b>Ramp-function generator minimum ramp-up time / RFG t_RU min</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	999999.000 [s]	0.000 [s]
<b>Description:</b>	Sets the minimum ramp-up time. The ramp-up time (p1120) is limited internally to this minimum value.		
<b>Dependency:</b>	Refer to: p1082		
<b>Note:</b>	The setting should be based on the startup times (r0345) of the motor. If the maximum speed p1082 changes, p1123 is re-calculated.		
<b>p1127[0...n]</b>	<b>Ramp-function generator minimum ramp-down time / RFG t_RD min</b>		
PM230	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
PM250, PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	999999.000 [s]	0.000 [s]
<b>Description:</b>	Sets the minimum ramp-down time. The ramp-down time (p1121) is limited internally to this minimum value.		
<b>Dependency:</b>	Refer to: p1082		
<b>Note:</b>	For U/f control and sensorless vector control (see p1300), a ramp-down time of 0 s is not expedient. The setting should be based on the startup times (r0345) of the motor. If the maximum speed p1082 changes, p1127 is re-calculated.		

## 2 Parameters

### 2.2 List of parameters

<b>p1127[0...n]</b>	<b>Ramp-function generator minimum ramp-down time / RFG t_RD min</b>		
PM240	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	999999.000 [s]	0.000 [s]
<b>Description:</b>	Sets the minimum ramp-down time. The ramp-down time (p1121) is limited internally to this minimum value.		
<b>Dependency:</b>	Refer to: p1082		
<b>Note:</b>	For U/f control and sensorless vector control (see p1300), a ramp-down time of 0 s is not expedient. The setting should be based on the startup times (r0345) of the motor. If the maximum speed p1082 changes, p1127 is re-calculated. If a braking resistor is connected to the DC link (p0219 > 0), then the minimum ramp-down time is automatically adapted using p1127.		
<b>p1130[0...n]</b>	<b>Ramp-function generator initial rounding-off time / RFG t_start_round</b>		
PM230	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	30.000 [s]	2.000 [s]
<b>Description:</b>	Sets the initial rounding-off time for the extended ramp generator. The value applies to ramp-up and ramp-down.		
<b>Note:</b>	Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.		
<b>p1130[0...n]</b>	<b>Ramp-function generator initial rounding-off time / RFG t_start_round</b>		
PM240	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250, PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	30.000 [s]	0.000 [s]
<b>Description:</b>	Sets the initial rounding-off time for the extended ramp generator. The value applies to ramp-up and ramp-down.		
<b>Note:</b>	Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.		
<b>p1131[0...n]</b>	<b>Ramp-function generator final rounding-off time / RFG t_end_delay</b>		
PM230	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	30.000 [s]	2.000 [s]
<b>Description:</b>	Sets the final rounding-off time for the extended ramp generator. The value applies to ramp-up and ramp-down.		
<b>Note:</b>	Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.		
<b>p1131[0...n]</b>	<b>Ramp-function generator final rounding-off time / RFG t_end_delay</b>		
PM240	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250, PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	30.000 [s]	0.000 [s]
<b>Description:</b>	Sets the final rounding-off time for the extended ramp generator. The value applies to ramp-up and ramp-down.		
<b>Note:</b>	Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.		

<b>p1134[0...n]</b>	<b>Ramp-function generator rounding-off type / RFG round-off type</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	Sets the smoothed response to the OFF1 command or the reduced setpoint for the extended ramp-function generator.		
<b>Value:</b>	0: Cont smoothing 1: Discot smoothing		
<b>Dependency:</b>	No effect up to initial rounding-off time (p1130) > 0 s.		
<b>Note:</b>	p1134 = 0 (continuous smoothing) If the setpoint is reduced while ramping-up, initially a final rounding-off is carried out and then the ramp-up completed. During the final rounding-off, the output of the ramp-function generator continues to go in the direction of the previous setpoint (overshoot). After the final rounding-off has been completed, the output goes toward the new setpoint. p1134 = 1 (discontinuous smoothing) If the setpoint is reduced while ramping-up, then the output goes immediately in the direction of the new setpoint. For the setpoint change there is no rounding-off.		
<b>p1135[0...n]</b>	<b>OFF3 ramp-down time / OFF3 t_RD</b>		
PM230	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3060, 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	5400.000 [s]	30.000 [s]
<b>Description:</b>	Sets the ramp-down time from the maximum speed down to zero speed for the OFF3 command.		
<b>Dependency:</b>	The parameter is pre-assigned depending on the size of the power unit.		
<b>Note:</b>	This time can be exceeded if the DC link voltage reaches its maximum value.		
<b>p1135[0...n]</b>	<b>OFF3 ramp-down time / OFF3 t_RD</b>		
PM240	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250, PM260	<b>Can be changed:</b> C(1), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3060, 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	5400.000 [s]	0.000 [s]
<b>Description:</b>	Sets the ramp-down time from the maximum speed down to zero speed for the OFF3 command.		
<b>Note:</b>	This time can be exceeded if the DC link voltage reaches its maximum value.		
<b>p1136[0...n]</b>	<b>OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	30.000 [s]	2.000 [s]
<b>Description:</b>	Sets the initial rounding-off time for OFF3 for the extended ramp generator.		

## 2 Parameters

### 2.2 List of parameters

<b>p1136[0...n]</b>	<b>OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250, PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	30.000 [s]	0.000 [s]
<b>Description:</b>	Sets the initial rounding-off time for OFF3 for the extended ramp generator.		
<b>p1137[0...n]</b>	<b>OFF3 final rounding-off time / RFG OFF3 t_end_del</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	30.000 [s]	0.000 [s]
<b>Description:</b>	Sets the final rounding-off time for OFF3 for the extended ramp generator.		
<b>p1138[0...n]</b>	<b>CI: Ramp-function generator ramp-up time scaling / RFG t_RU scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3060, 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	Sets the signal source for scaling the ramp-up time of the ramp-function generator.		
<b>Dependency:</b>	Refer to: p1120		
<b>Note:</b>	The ramp-up time is set in p1120.		
<b>p1139[0...n]</b>	<b>CI: Ramp-function generator ramp-down time scaling / RFG t_RD scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3060, 3070
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	Sets the signal source for scaling the ramp-down time of the ramp-function generator.		
<b>Dependency:</b>	Refer to: p1121		
<b>Note:</b>	The ramp-down time is set in p1121.		
<b>p1140[0...n]</b>	<b>BI: Enable ramp-function generator/inhibit ramp-function generator / RFG enable</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 2090.4
			[1] 1
			[2] 2090.4
			[3] 2090.4
<b>Description:</b>	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.		
<b>Dependency:</b>	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.

---

### p1140[0...n] **BI: Enable ramp-function generator/inhibit ramp-function generator / RFG enable**

CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1

**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**

CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 2090.5
			[1] 1
			[2] 2090.5
			[3] 2090.5

**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.

<b>p1141[0...n]</b>	<b>BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: r0054, p1140, p1142		
<b>Caution:</b>	When "master control from PC" is activated, this binector input is ineffective.		
			
<b>Notice:</b>	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.		

<b>p1142[0...n]</b>	<b>BI: Enable setpoint/inhibit setpoint / Setpoint enable</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 2090.6 [1] 1 [2] 2090.6 [3] 2090.6
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p1140, p1141		
<b>Caution:</b>	When "master control from PC" is activated, this binector input is ineffective.		
			
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>Note:</b>	When the function module "position control" (r0108.3 = 1) is activated, this binector input is interconnected as follows as standard: BI: p1142 = 0 signal		

<b>p1142[0...n]</b>	<b>BI: Enable setpoint/inhibit setpoint / Setpoint enable</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2501
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	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

**p1143[0...n]****BI: Ramp-function generator, accept setting value / RFG accept set v**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3060, 3070
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	0

**Description:**

Sets the signal source for accepting the setting value of the ramp-function generator.

**Dependency:**

The signal source for the ramp-function generator setting value is set using parameters.

Refer to: p1144

**Note:**

0/1 signal:

The ramp-function generator output is immediately (without delay) set to the setting value of the ramp-function generator.

1 signal:

The setting value of the ramp-function generator is effective.

1/0 signal:

The input value of the ramp-function generator is effective. The ramp-function generator output is adapted to the input value using the ramp-up time or the ramp-down time.

0 signal:

The input value of the ramp-function generator is effective.

**p1144[0...n]****CI: Ramp-function generator setting value / RFG setting value**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3060, 3070
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	0

**Description:**

Sets the signal source for the ramp-function generator setting value.

**Dependency:**

The signal source for accepting the setting value is set using parameters.

Refer to: p1143

**p1145[0...n]****Ramp-function generator tracking intensity. / RFG track intens**

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3080
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.0	50.0	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.

## 2 Parameters

### 2.2 List of parameters

- Recommend.:** If at least one speed setpoint filter/velocity setpoint filter is activated (p1414), then the ramp-function generator tracking should be deactivated (p1145 = 0.0). When the speed setpoint filter is activated, the output value of the ramp-function generator can no longer be tracked (corrected) corresponding to the maximum possible drive acceleration.  
 Re p1145 = 0.0:  
 This value de-activates the ramp-function generator tracking.  
 Re p1145 = 0.0 ... 1.0:  
 Generally, these values are not practical. They cause the motor to accelerate below its torque limit. The lower the selected value, the greater the margin between the controller and torque limit when accelerating.  
 Re p1145 > 1.0:  
 The greater the value, the higher the permissible deviation between the speed setpoint and speed actual value.
- Notice:** If ramp-function generator tracking is activated and the ramp time is set too short, this can cause unsteady acceleration.  
 Remedy:  
 - switch off ramp-function generator tracking (p1145 = 0).  
 - increase the ramp-up/ramp-down time (p1120, p1121).
- Note:** In the U/f mode, ramp-function generator tracking is not active.

---

#### p1148[0...n] Ramp-function gen. tolerance for ramp-up and ramp-down active / RFG tol HL/RL act

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3060, 3070
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.000 [rpm]	1000.000 [rpm]	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

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2007	<b>Dyn. index:</b> -
<b>Units group:</b> 39_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3060, 3070
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [rev/s <sup>2</sup> ]	- [rev/s <sup>2</sup> ]	- [rev/s <sup>2</sup> ]

**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

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3001, 3080
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [rpm]	- [rpm]	- [rpm]

**Description:** Displays the setpoint at the output of the ramp-function generator.

---

#### p1155[0...n] CI: Speed controller speed setpoint 1 / n\_ctrl n\_set 1

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3001, 3080, 5030, 6031
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	0

**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.

---

<b>p1160[0...n]</b>	<b>CI: Speed controller speed setpoint 2 / n_ctrl n_set 2</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32	
<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3001, 3080	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	0	

**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).

---

<b>r1169</b>	<b>CO: Speed controller speed setpoints 1 and 2 / n_ctrl n_set 1/2</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -	
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3080	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [rpm]	- [rpm]	- [rpm]	

**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).

---

<b>r1170</b>	<b>CO: Speed controller setpoint sum / n_ctrl setp sum</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -	
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3001, 3080, 6300	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [rpm]	- [rpm]	- [rpm]	

**Description:** Display and connector output for the speed setpoint after selecting the ramp-function generator.

The value is the sum of speed setpoint 1 (p1155) and speed setpoint 2 (p1160).

**Dependency:** Refer to: r1150, p1155, p1160

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<b>r1197</b>	<b>Fixed speed setpoint number actual / n_set_fixed No act</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3010	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	

**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).

<b>r1198.0...15</b>	<b>CO/BO: Control word setpoint channel / STW setpoint chan</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2505		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Display and BICO output for the control word of the setpoint channel.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Fixed setp bit 0	Yes	No	3010
	01	Fixed setp bit 1	Yes	No	3010
	02	Fixed setp bit 2	Yes	No	3010
	03	Fixed setp bit 3	Yes	No	3010
	05	Inhibit negative direction	Yes	No	3040
	06	Inhibit positive direction	Yes	No	3040
	11	Setpoint inversion	Yes	No	3040
	13	Motorized potentiometer raise	Yes	No	3020
	14	Motorized potentiometer lower	Yes	No	3020
	15	Bypass ramp-function generator	Yes	No	3060, 3070

<b>r1199.0...8</b>	<b>CO/BO: Ramp-function generator status word / RFG ZSW</b>				
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 3001, 3080		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the status word for the ramp-function generator (RFG).				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Ramp-up active	Yes	No	-
	01	Ramp-down active	Yes	No	-
	02	RFG active	Yes	No	-
	03	Ramp-function generator set	Yes	No	-
	04	Ramp-function generator held	Yes	No	-
	05	Ramp-function generator tracking active	Yes	No	-
	06	Maximum limit active	Yes	No	-
	07	Ramp-function generator acceleration positive	Yes	No	-
	08	Ramp-function generator acceleration negative	Yes	No	-
<b>Note:</b>	Re bit 02: The bit is the result of the OR logic operation - bit 00 and bit 01.				

<b>p1200[0...n]</b>	<b>Flying restart operating mode / FlyRest op_mode</b>			
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0	4	0	
<b>Description:</b>	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.			
<b>Value:</b>	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
- 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:** For p1200 = 1, 4, the following applies:  
Flying restart is active after faults, OFF1, OFF2, OFF3.  
For p1200 = 1, the following applies:  
The search is made in both directions.  
For p1200 = 4, the following applies:  
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).


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<b>p1201[0...n]</b>	<b>BI: Flying restart enable signal source / Fly_res enab S_src</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary	
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	1	


- 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.

---


<b>p1202[0...n]</b>	<b>Flying restart search current / FlyRest I_srch</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10 [%]	400 [%]	90 [%]

- 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).


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<b>p1202[0...n]</b>	<b>Flying restart search current / FlyRest I_srch</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250, PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10 [%]	400 [%]	100 [%]
<b>Description:</b>	Sets the search current for the "flying restart" function. The value is referred to the motor magnetizing current.		
<b>Dependency:</b>	Refer to: r0331		
<b>Caution:</b>	An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.		
			
<b>Note:</b>	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).		

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<b>p1203[0...n]</b>	<b>Flying restart search rate factor / FlyRst v_Srch Fact</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10 [%]	4000 [%]	150 [%]
<b>Description:</b>	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.		
<b>Recommend.:</b>	For encoderless vector control and motor cables longer than 200 m, set the factor p1203 >= 300 %.		
<b>Caution:</b>	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.		
			
<b>Note:</b>	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).		

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<b>p1203[0...n]</b>	<b>Flying restart search rate factor / FlyRst v_Srch Fact</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250, PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10 [%]	4000 [%]	100 [%]
<b>Description:</b>	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.		
<b>Recommend.:</b>	For encoderless vector control and motor cables longer than 200 m, set the factor p1203 >= 300 %.		
<b>Caution:</b>	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.		
			
<b>Note:</b>	The parameter factory setting is selected so that standard induction motors that are rotating can be found and restarted as quickly as possible (fast flying restart). With this pre-setting, if the motor is not found (e.g. for motors that are accelerated as a result of active loads or with U/f control and low speeds), we recommend that the search rate is reduced (by increasing p1203).		

**r1204.0...13****CO/BO: Flying restart U/f control status / FlyRest Uf st**

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:**

Displays the status for checking and monitoring flying restart states in the U/f control mode.

**Bit field:**

Bit	Signal name	1 signal	0 signal	FP
00	Current impressed	Yes	No	-
01	No current flow	Yes	No	-
02	Voltage input	Yes	No	-
03	Voltage reduced	Yes	No	-
04	Start ramp-function generator	Yes	No	-
05	Wait for execution	Yes	No	-
06	Slope filter act	Yes	No	-
07	Positive gradient	Yes	No	-
08	Current < thresh	Yes	No	-
09	Current minimum	Yes	No	-
10	Search in the positive direction	Yes	No	-
11	Stop after positive direction	Yes	No	-
12	Stop after negative direction	Yes	No	-
13	No result	Yes	No	-

**r1205.0...15****CO/BO: Flying restart vector control status / FlyRest vector st**

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:**

Display and connector output for the status for checking and monitoring flying restart states in the vector control mode.

**Bit field:**

Bit	Signal name	1 signal	0 signal	FP
00	Speed adaptation circuit record angle	Yes	No	-
01	Speed adaptation circuit set gain to 0	Yes	No	-
02	Isd channel enable	Yes	No	-
03	Speed control switched out	Yes	No	-
04	Quadrature arm switched in	Yes	No	-
05	Special transformation active	Yes	No	-
06	Speed adaptation circuit set I comp to 0	Yes	No	-
07	Current control on	Yes	No	-
08	Isd_set = 0 A	Yes	No	-
09	Frequency held	Yes	No	-
10	Search in the positive direction	Yes	No	-
11	Search Started	Yes	No	-
12	Current impressed	Yes	No	-
13	Search interrupted	Yes	No	-
14	Speed adaptation circuit deviation = 0	Yes	No	-
15	Speed control activated	Yes	No	-

**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.

<b>p1206[0...9]</b>	<b>Faults without automatic restart / F w/out auto AR</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	65535	0
<b>Description:</b>	Sets faults for which automatic restart should not be effective.		
<b>Dependency:</b>	The setting is only effective for p1210 = 6, 16, 26. Refer to: p1210		

<b>p1210</b>	<b>Automatic restart mode / AR mode</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	26	0
<b>Description:</b>	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.		
<b>Value:</b>	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		
<b>Recommend.:</b>	For brief line supply failures, the motor shaft may still be rotating when restarting. The "flying restart" function (p1200) might need to be activated to restart while the motor shaft is still rotating.		
<b>Dependency:</b>	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		
<b>Danger:</b>	 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.		
<b>Notice:</b>	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.		
<b>Note:</b>	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, for external 24 V power supplies of the CU, additional faults subsequently occur, these are no longer interpreted as line faults and are therefore also not acknowledged. 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. The restart is interrupted with either OFF2 or OFF3. Alarm A07321 is only displayed if the cause of the fault has been removed and the drive is restarted by setting the switch-on command.

**p1211****Automatic restart start attempts / AR start attempts**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	10	3

**Description:**

Sets the start attempts of the automatic restart function for p1210 = 4, 6, 14, 16, 26.

**Dependency:**

A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

Refer to: p1210, r1214

**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 be 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.

Re 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**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
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

**Notice:**

A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

**Note:**

The faults are automatically acknowledged 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.

<b>p1213[0...1]</b>	<b>Automatic restart monitoring time / AR t_monit</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [s]	10000.0 [s]	[0] 60.0 [s] [1] 0.0 [s]
<b>Description:</b>	Sets the monitoring time of the automatic restart (AR).		
<b>Index:</b>	[0] = Restart [1] = Reset start counter		
<b>Dependency:</b>	Refer to: p1210, r1214		
<b>Notice:</b>	A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1). 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.		
<b>Note:</b>	<p>Re index 0:</p> <p>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.</p> <p>Re index 1:</p> <p>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.</p>		

<b>r1214.0...15</b>	<b>CO/BO: Automatic restart status / AR status</b>				
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the status of the automatic restart (AR).				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Initialization	Yes	No	-
	01	Wait for alarm	Yes	No	-
	02	Auto restart act	Yes	No	-
	03	Setting the acknowledgement command	Yes	No	-
	04	Acknowledge alarms	Yes	No	-
	05	Restart	Yes	No	-
	06	Delay time running after automatic power-up	Yes	No	-
	07	Fault	Yes	No	-
	10	Effective fault	Yes	No	-
	12	Start count. bit 0	ON	OFF	-
	13	Start count. bit 1	ON	OFF	-
	14	Start count. bit 2	ON	OFF	-
	15	Start count. bit 3	ON	OFF	-

**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, r1214.7 is displayed, otherwise the active fault r2139.3.

Re bits 12 ... 15:  
Actual state of the start counter (binary coded).

Re bit 04 in addition:  
For p1210 = 26, the system waits in this state until the switch-on command is available.

**p1215****Motor holding brake configuration / Brake config**

PM230

**Access level:** 2**Calculated:** -**Data type:** Integer16**Can be changed:** T**Scaling:** -**Dyn. index:** -**Units group:** -**Unit selection:** -**Func. diagram:** 2701**Min****Max****Factory setting**

0

3

0

**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.

**p1215****Motor holding brake configuration / Brake config**

PM240

**Access level:** 2**Calculated:** -**Data type:** Integer16

PM250, PM260

**Can be changed:** T**Scaling:** -**Dyn. index:** -**Units group:** -**Unit selection:** -**Func. diagram:** 2701**Min****Max****Factory setting**

0

3

0

**Description:**

Sets the holding brake configuration.

## 2 Parameters

### 2.2 List of parameters

**Value:** 0: No motor holding brake available  
1: Motor holding brake acc. to sequence control  
2: Motor holding brake always open  
3: Motor holding brake like sequence control connection via BICO

**Dependency:** Refer to: p1216, p1217, p1226, p1227, p1228

**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.

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<b>p1216</b>	<b>Motor holding brake opening time / Brake t<sub>open</sub></b>		
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2701	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0 [ms]	10000 [ms]	100 [ms]	

**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.

**Recommend.:** This time should be set longer than the actual opening time of the brake. This ensures that the drive cannot accelerate when the brake is applied.

**Dependency:** Refer to: p1215, p1217

**Note:** For a motor with DRIVE-CLiQ and integrated brake, for p0300 = 10000, this time is pre-assigned the value saved in the motor.

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<b>p1217</b>	<b>Motor holding brake closing time / Brake t<sub>close</sub></b>		
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2701	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0 [ms]	10000 [ms]	100 [ms]	


**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.

**Recommend.:** This time should be set longer than the actual closing time of the brake. This ensures that the pulses are only suppressed after the brake has closed.

**Dependency:** Refer to: p1215, p1216

**Notice:** If the selected closing time is too short with respect to the actual closing time of the brake, then the load can sag.  
If the closing time is selected to be too long with respect to the actual closing time of the brake, the control works against the brake and therefore reduces its lifetime.

**Note:** For a motor with DRIVE-CLiQ and integrated brake, for p0300 = 10000, this time is pre-assigned the value saved in the motor.

<b>p1226[0...n]</b>	<b>Threshold for zero speed detection / n_standst n_thresh</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 2701, 8020
	<b>Min</b> 0.00 [rpm]	<b>Max</b> 210000.00 [rpm]	<b>Factory setting</b> 20.00 [rpm]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p1227		
<b>Caution:</b>	For closed-loop speed and torque control without encoder, the following applies: If p1226 is set to values under approx. 1 % of the rated motor speed, then the model switchover limits of the vector control must be increased in order to guarantee reliable shutdown (see p1755, p1750 bit 7).		
			
<b>Note:</b>	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.		
<b>p1227</b>	<b>Zero speed detection monitoring time / n_standst t_monit</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2701
	<b>Min</b> 0.000 [s]	<b>Max</b> 300.000 [s]	<b>Factory setting</b> 300.000 [s]
<b>Description:</b>	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).		
<b>Dependency:</b>	The parameter is pre-assigned depending on the size of the power unit. Refer to: p1226		
<b>Notice:</b>	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.		
<b>Note:</b>	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.		
<b>p1228</b>	<b>Pulse suppression delay time / Pulse suppr t_del</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2701, 8020
	<b>Min</b> 0.000 [s]	<b>Max</b> 299.000 [s]	<b>Factory setting</b> 0.010 [s]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p1226, p1227		

## 2 Parameters

### 2.2 List of parameters

**Notice:** When the motor holding brake is activated, pulse cancellation is additionally delayed by the brake closing time (p1217).

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<b>p1230[0...n]</b>	<b>BI: DC braking activation / DC brake act</b>		
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7017	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	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.

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<b>p1231[0...n]</b>	<b>DC braking configuration / DCBRK config</b>		
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS, p0130	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7014, 7016, 7017	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0	14	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:** The function can only be used for induction motors (p0300 = 1).

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, depending on the operating mode).

- the drive is not in the state "S4: Operation" or in "S5x".

- the internal pulse enable is missing (r0046.19 = 0).

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 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. 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

<b>p1232[0...n]</b>	<b>DC braking braking current / DCBRK I_brake</b>				
	<b>Access level:</b> 2	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS, p0130		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7017		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]		
<b>Description:</b>	Sets the braking current for DC braking.				
<b>Dependency:</b>	Refer to: p1230, p1231, p1233, p1234, r1239, p1345, p1346				
<b>Note:</b>	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.				
<b>p1233[0...n]</b>	<b>DC braking time / DCBRK time</b>				
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS, p0130		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7017		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	0.0 [s]	3600.0 [s]	1.0 [s]		
<b>Description:</b>	Sets the DC braking time (as fault response).				
<b>Dependency:</b>	Refer to: p1230, p1231, p1232, p1234, r1239				
<b>p1234[0...n]</b>	<b>Speed at the start of DC braking / DCBRK n_start</b>				
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS, p0130		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7017		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]		
<b>Description:</b>	Sets the starting speed for DC braking. If the actual speed falls below this threshold, then DC braking is activated.				
<b>Dependency:</b>	Refer to: p1230, p1231, p1232, p1233, r1239				
<b>r1239.8...13</b>	<b>CO/BO: DC braking status word / DCBRK ZSW</b>				
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Status word of the DC braking.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	08	DC braking active	Yes	No	7017
	10	DC braking ready	Yes	No	7017
	11	DC braking selected	Yes	No	-
	12	DC braking selection internally inhibited	Yes	No	-
	13	DC braking for OFF1/OFF3	Yes	No	-
<b>Dependency:</b>	Refer to: p1231, p1232, p1233, p1234				
<b>Note:</b>	Re bit 12, 13: Only effective for p1231 = 14.				

p1240[0...n]	Vdc controller configuration (vector control) / Vdc ctr config vec		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	3	1
<b>Description:</b>	Sets the controller configuration of the DC link voltage (Vdc controller) in the closed-loop control mode. For U/f control: see p1280.		
<b>Value:</b>	0: Inhib Vdc ctrl 1: Enable Vdc_max controller 3: Enable Vdc_min controller and Vdc_max controller		
<b>Dependency:</b>	Refer to: p1245		
<b>Notice:</b>	An excessively high value in p1245 can possibly negatively influence the normal operation of the drive.		
<b>Note:</b>	p1240 = 1, 3: When the DC link voltage limit specified for the power unit is reached the following applies: - the Vdc_max controller limits the regenerative energy in order that the DC link voltage is kept below the maximum DC link voltage when braking. - the ramp-down times are automatically increased. If overvoltage faults occur in spite of the Vdc_max controller being active, the ramp-down time in p1121 might need to be increased. - set the input voltage p0210 as low as possible in line with the supply voltage (in so doing avoid A07401). p1240 = 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. - the Vdc_min controller cannot be used when the line voltage is permanently below 380 V (if required, p1247 should be reduced).		
p1240[0...n]	Vdc controller configuration (vector control) / Vdc ctr config vec		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	3	1
<b>Description:</b>	Sets the controller configuration of the DC link voltage (Vdc controller) in the closed-loop control mode. For U/f control: see p1280.		
<b>Value:</b>	0: Inhib Vdc ctrl 1: Enable Vdc_max controller 2: Enable Vdc_min controller (kinetic buffering) 3: Enable Vdc_min controller and Vdc_max controller		
<b>Dependency:</b>	Refer to: p1245		
<b>Notice:</b>	An excessively high value in p1245 can possibly negatively influence the normal operation of the drive.		
<b>Note:</b>	If a braking resistor is connected to the DC link (p0219 > 0), then the Vdc_max control is automatically deactivated. p1240 = 1, 3: When the DC link voltage limit specified for the power unit is reached the following applies: - the Vdc_max controller limits the regenerative energy in order that the DC link voltage is kept below the maximum DC link voltage when braking. - the ramp-down times are automatically increased. p1240 = 2, 3: When the switch-in threshold of the Vdc_min controller is reached (p1245), the following applies: - the Vdc_min controller limits the energy taken from the DC link in order to keep the DC link voltage above the minimum DC link voltage when accelerating. - the motor is braked in order to use its kinetic energy to buffer the DC link.		



<b>r1242</b>		<b>Vdc_max controller switch-in level / Vdc_max on_level</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
PM240	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6220	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	- [V]	- [V]	- [V]	
<b>Description:</b>	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)			
<b>Notice:</b>	If the activation level of the Vdc_max controller is already exceeded in the deactivated state (pulse inhibit) by the DC link voltage, then the controller can be automatically deactivated (see F07401), so that the drive is not accelerated the next time that it is activated.			
<b>Note:</b>	The Vdc_max controller is not switched back off until the DC-link voltage falls below the threshold 0.95 * r1242 and the controller output is zero.			

<b>p1243[0...n]</b>		<b>Vdc_max controller dynamic factor / Vdc_max dyn_factor</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32	
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6220	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	1 [%]	10000 [%]	100 [%]	
<b>Description:</b>	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.			

<b>p1245[0...n]</b>		<b>Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	65 [%]	150 [%]	73 [%]	
<b>Description:</b>	Sets the switch-in level for the Vdc-min controller (kinetic buffering). The value is obtained as follows: r1246[V] = p1245[%] * sqrt(2) * p0210			
<b>Dependency:</b>	Refer to: p0210			
<b>Warning:</b>	An excessively high value may adversely affect normal drive operation.			



<b>p1245[0...n]</b>		<b>Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	65 [%]	150 [%]	76 [%]	
<b>Description:</b>	Sets the switch-in level for the Vdc-min controller (kinetic buffering). The value is obtained as follows: r1246[V] = p1245[%] * sqrt(2) * p0210			

## 2 Parameters

### 2.2 List of parameters

**Dependency:** Refer to: p0210  
**Warning:** An excessively high value may adversely affect normal drive operation.



<b>r1246</b>		<b>Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
PM240	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6220	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	- [V]	- [V]	- [V]	

**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  $1.05 \cdot p1246$  and the controller output is zero.

<b>p1247[0...n]</b>		<b>Vdc_min controller dynamic factor (kinetic buffering) / Vdc_min dyn_factor</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32	
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6220	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	1 [%]	10000 [%]	300 [%]	

**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.

<b>p1249[0...n]</b>		<b>Vdc_max controller speed threshold / Vdc_max n_thresh</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32	
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0.00 [rpm]	210000.00 [rpm]	10.00 [rpm]	

**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.

**Note:** For fast braking where the ramp-function generator tracking was active, it is possible to prevent the drive rotating in the opposite direction by increasing the speed threshold and setting a final rounding-off time in the ramp-function generator (p1131). This is supported using a dynamic setting of the speed controller.

<b>p1250[0...n]</b>		<b>Vdc controller proportional gain / Vdc_ctrl Kp</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0.00	100.00	1.00	

**Description:** Sets the proportional gain for the DC-link voltage controller (Vdc\_min controller, Vdc\_max controller).

**Dependency:** The effective proportional gain is obtained taking into account p1243 (Vdc\_max controller dynamic factor) and the DC link capacitance of the power unit.

<b>p1251[0...n]</b>	<b>Vdc controller integral time / Vdc_ctrl Tn</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	10000 [ms]	0 [ms]
<b>Description:</b>	Sets the integral time for the DC-link voltage controller (Vdc_min controller, Vdc_max controller).		
<b>Dependency:</b>	The effective integral time is obtained taking into account p1243 (Vdc_max controller dynamic factor).		
<b>Note:</b>	p1251 = 0: The integral component is de-activated.		
<b>p1252[0...n]</b>	<b>Vdc controller rate time / Vdc_ctrl t_rate</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	1000 [ms]	0 [ms]
<b>Description:</b>	Sets the rate time constant for the DC-link voltage controller (Vdc_min controller, Vdc_max controller).		
<b>Dependency:</b>	The effective rate time is obtained taking into account p1243 (Vdc_max controller dynamic factor).		
<b>p1254</b>	<b>Vdc_max controller automatic ON level detection / Vdc_max SenseOnLev</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	Activates/de-activates the automatic sensing of the switch-in level for the Vdc_max controller.		
<b>Value:</b>	0: Automatic detection inhibited 1: Automatic detection enabled		
<b>p1254</b>	<b>Vdc_max controller automatic ON level detection / Vdc_max SenseOnLev</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	1
<b>Description:</b>	Activates/de-activates the automatic sensing of the switch-in level for the Vdc_max controller.		
<b>Value:</b>	0: Automatic detection inhibited 1: Automatic detection enabled		
<b>p1255[0...n]</b>	<b>Vdc_min controller time threshold / Vdc_min t_thresh</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	1800.000 [s]	0.000 [s]
<b>Description:</b>	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: p1256 = 1		
<b>Notice:</b>	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.		

## 2 Parameters

### 2.2 List of parameters

<b>p1256[0...n]</b>	<b>Vdc_min controller response (kinetic buffering) / Vdc_min response</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	Sets the response for the Vdc_min controller (kinetic buffering).		
<b>Value:</b>	0: Buffer Vdc until undervoltage, n<p1257 -> F07405 1: Buff. Vdc until undervolt., n<p1257 -> F07405, t>p1255 -> F07406		
<b>p1257[0...n]</b>	<b>Vdc_min controller speed threshold / Vdc_min n_thresh</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	210000.00 [rpm]	50.00 [rpm]
<b>Description:</b>	Sets the speed threshold for the Vdc-min controller (kinetic buffering). If this value is exceeded a fault is output; the required response can be parameterized . Kinetic buffering is not started below the speed threshold.		
<b>Note:</b>	Exiting the Vdc_min control before reaching motor standstill prevents the regenerative braking current from increasing significantly at low speeds, and after a pulse inhibit, means that the motor coasts down. However, the maximum braking torque can be set via the appropriate torque limiting.		
<b>r1258</b>	<b>CO: Vdc controller output / Vdc_ctrl output</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM240	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Displays the actual output of the Vdc controller (DC link voltage controller)		
<b>Note:</b>	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.		
<b>p1271[0...n]</b>	<b>Flying restart maximum frequency for the inhibited direction / FlyRes f_max dir</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [Hz]	650 [Hz]	0 [Hz]
<b>Description:</b>	Sets the maximum search frequency for a flying restart in an inhibited setpoint direction (p1110, p1111).		
<b>Note:</b>	The parameter has no effect for an operating mode, which only searches in the setpoint direction (p1200 > 3).		
<b>p1280[0...n]</b>	<b>Vdc controller configuration (U/f) / Vdc_ctr config U/f</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300, 6320
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	1
<b>Description:</b>	Sets the configuration of the controller for the DC link voltage (Vdc controller) in the U/f operating mode.		
<b>Value:</b>	0: Inhib Vdc ctrl 1: Enable Vdc_max controller		

**Note:** For high input voltages (p0210), the following settings can improve the degree of ruggedness of the Vdc\_max controller:

- Set the input voltage as low as possible, and in so doing, avoid A07401 (p0210).
- 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 (p1810.1 = 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).

p1280[0...n]	Vdc controller configuration (U/f) / Vdc_ctr config U/f		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300, 6320
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	3	1

**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: Enable Vdc\_max controller
- 2: Enable Vdc\_min controller (kinetic buffering)
- 3: Enable Vdc\_min controller and Vdc\_max controller

**Note:** For high input voltages (p0210), the following settings can improve the degree of ruggedness of the Vdc\_max controller:

- Set the input voltage as low as possible, and in so doing, avoid A07401 (p0210).
- 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 (p1810.1 = 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).

The following measures are suitable to improve the Vdc\_min controller:

- Optimize the Vdc\_min controller (see p1287).
- Activate the Vdc correction in the current controller (p1810.1 = 1).

If a braking resistor is connected to the DC link (p0219 > 0), then the Vdc\_max control is automatically deactivated.

r1282	Vdc_max controller switch-in level (U/f) / Vdc_max on_level		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM240	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6320
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [V]	- [V]	- [V]

**Description:** Displays the switch-in level for the Vdc\_max controller.

If p1294 = 0 (automatic sensing of the switch-in level = off), then the following applies:  
 $r1282 = 1.15 * \sqrt{2} * p0210$  (supply voltage)

If p1294 = 1 (automatic sensing of the switch-in level = on), then the following applies:  
 $r1282 = Vdc\_max - 50.0 \text{ V}$  (Vdc\_max: Overvoltage threshold of the power unit)  
 $r1282 = Vdc\_max - 25.0 \text{ V}$  (for 230 V power units)

**Notice:** If the activation level of the Vdc\_max controller is already exceeded in the deactivated state (pulse inhibit) by the DC link voltage, then the controller can be automatically deactivated (see F07401), so that the drive is not accelerated the next time that it is activated.

**Note:** The Vdc\_max controller is not switched back off until the DC-link voltage falls below the threshold  $0.95 * r1282$  and the controller output is zero.

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<b>p1283[0...n]</b>	<b>Vdc_max controller dynamic factor (U/f) / Vdc_max dyn_factor</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6320
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1 [%]	10000 [%]	100 [%]
<b>Description:</b>	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.		

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<b>p1284[0...n]</b>	<b>Vdc_max controller time threshold (U/f) / Vdc_max t_thresh</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	300.000 [s]	4.000 [s]
<b>Description:</b>	Sets the monitoring time for the Vdc_max controller. If the down ramp of the speed setpoint is held for longer than the time set in p1284, then fault F07404 is output.		

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<b>p1285[0...n]</b>	<b>Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	65 [%]	150 [%]	76 [%]
<b>Description:</b>	Sets the switch-in level for the Vdc-min controller (kinetic buffering). The value is obtained as follows: $p1286[V] = p1285[\%] * \sqrt{2} * p0210$		
<b>Warning:</b>	An excessively high value may adversely affect normal drive operation.		




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<b>r1286</b>	<b>Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6320
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [V]	- [V]	- [V]
<b>Description:</b>	Displays the switch-in level for the Vdc_min controller (kinetic buffering).		
<b>Note:</b>	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.		

<b>p1287[0...n]</b>	<b>Vdc_min controller dynamic factor (kinetic buffering) (U/f) / Vdc_min dyn_factor</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6320
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1 [%]	10000 [%]	100 [%]
<b>Description:</b>	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.		
<b>p1288[0...n]</b>	<b>Vdc_max controller feedback coupling factor ramp-fct. gen. (U/f) / Vdc_max factor RFG</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000	100.000	0.500
<b>Description:</b>	Sets the feedback factor for the ramp-function generator. Its ramp times are decelerated relative to the output signal of the Vdc_max controller.		
<b>Note:</b>	For values p1288 = 0.0 to 0.5, the controller dynamics are automatically adapted internally.		
<b>p1290[0...n]</b>	<b>Vdc controller proportional gain (U/f) / Vdc_ctrl Kp</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6320
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	100.00	1.00
<b>Description:</b>	Sets the proportional gain for the Vdc controller (DC link voltage controller).		
<b>Note:</b>	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.		
<b>p1291[0...n]</b>	<b>Vdc controller integral time (U/f) / Vdc_ctrl Tn</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6320
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	10000 [ms]	40 [ms]
<b>Description:</b>	Sets the integral time for the Vdc controller (DC link voltage controller).		
<b>p1292[0...n]</b>	<b>Vdc controller rate time (U/f) / Vdc_ctrl t_rate</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6320
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	1000 [ms]	10 [ms]
<b>Description:</b>	Sets the rate time constant for the Vdc controller (DC link voltage controller).		

<b>p1293[0...n]</b>	<b>Vdc min controller output limit (U/f) / Vdc_min outp_lim</b>		
PM240	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6320
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Hz]	600.00 [Hz]	600.00 [Hz]
<b>Description:</b>	Sets the output limit for the Vdc min controller (DC link undervoltage controller).		
<b>p1294</b>	<b>Vdc_max controller automatic detection ON signal level (U/f) / Vdc_max SenseOnLev</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM240	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	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.		
<b>Value:</b>	0: Automatic detection inhibited 1: Automatic detection enabled		
<b>p1295[0...n]</b>	<b>Vdc_min controller time threshold (U/f) / Vdc_min t_thresh</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	10000.000 [s]	0.000 [s]
<b>Description:</b>	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		
<b>Notice:</b>	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.		
<b>p1296[0...n]</b>	<b>Vdc_min controller response (kinetic buffering) (U/f) / Vdc_min response</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	Sets the response for the Vdc_min controller (kinetic buffering).		
<b>Value:</b>	0: Buffer Vdc until undervoltage, n<p1297 -> F07405 1: Buff. Vdc until undervolt., n<p1297 -> F07405, t>p1295 -> F07406		
<b>Note:</b>	Re p1296 = 1: The quick stop ramp entered in p1135 must not be equal to zero, to prevent overcurrent shutdown if F07406 is triggered.		



p1297[0...n]	Vdc_min controller speed threshold (U/f) / Vdc_min n_thresh		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
	<b>Min</b> 0.00 [rpm]	<b>Max</b> 210000.00 [rpm]	<b>Factory setting</b> 50.00 [rpm]
<b>Description:</b>	Sets the speed threshold for the Vdc-min controller (kinetic buffering). If this value is exceeded a fault is output; the required response can be parameterized .		
<b>Note:</b>	Exiting the Vdc_min control before reaching motor standstill prevents the regenerative braking current from increasing significantly at low speeds, and after a pulse inhibit, means that the motor coasts down.		
r1298	CO: Vdc controller output (U/f) / Vdc_ctrl output		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM240	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6320
	<b>Min</b> - [rpm]	<b>Max</b> - [rpm]	<b>Factory setting</b> - [rpm]
<b>Description:</b>	Displays the actual output of the Vdc controller (DC link voltage controller)		
p1300[0...n]	Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode		
PM230	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300, 6301, 8012
	<b>Min</b> 0	<b>Max</b> 22	<b>Factory setting</b> 0
<b>Description:</b>	Sets the open and closed-loop control mode of a drive.		
<b>Value:</b>	0: U/f control with linear characteristic 1: U/f control with linear characteristic and FCC 2: U/f control with parabolic characteristic 3: U/f control with parameterizable characteristic 4: U/f control with linear characteristic and ECO 5: U/f control for drives requiring a precise freq. (e.g. textiles) 6: U/f control for drives requiring a precise frequency and FCC 7: U/f control for a parabolic characteristic and ECO 19: U/f control with independent voltage setpoint 20: Speed control (encoderless) 22: Torque control (encoderless)		
<b>Dependency:</b>	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. The output voltage is used for efficiency optimization for all U/f control types, load-dependent (see p0500 = 3). Refer to: p0300, p0311, p0500, p1501		
<b>Notice:</b>	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.		
<b>Note:</b>	Only by selecting closed-loop speed control (p1300 = 20) is it 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 I <sub>max</sub> frequency controller are switched off internally so that the output frequency can be set precisely. The I <sub>max</sub> voltage controller remains active. During operation (pulses enabled) the open-loop/closed-loop control mode cannot be changed by changing over drive data sets.		

## 2 Parameters

### 2.2 List of parameters

<b>p1300[0...n]</b>	<b>Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode</b>			
PM240	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
PM250, PM260	<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300, 6301, 8012	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0	22	0	
<b>Description:</b>	Sets the open and closed-loop control mode of a drive.			
<b>Value:</b>	0: U/f control with linear characteristic 1: U/f control with linear characteristic and FCC 2: U/f control with parabolic characteristic 3: U/f control with parameterizable characteristic 4: U/f control with linear characteristic and ECO 5: U/f control for drives requiring a precise freq. (e.g. textiles) 6: U/f control for drives requiring a precise frequency and FCC 7: U/f control for a parabolic characteristic and ECO 19: U/f control with independent voltage setpoint 20: Speed control (encoderless) 22: Torque control (encoderless)			
<b>Dependency:</b>	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			
<b>Notice:</b>	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.			
<b>Note:</b>	Only by selecting closed-loop speed control (p1300 = 20) is it 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 I <sub>max</sub> frequency controller are switched off internally so that the output frequency can be set precisely. The I <sub>max</sub> voltage controller remains active. During operation (pulses enabled) the open-loop/closed-loop control mode cannot be changed by changing over drive data sets.			

<b>p1302[0...n]</b>	<b>U/f control configuration / U/f config</b>				
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
PM250, PM260	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 bin		
<b>Description:</b>	Sets the configuration for the U/f control.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	03	Motor holding brake with constant stop frequency	Yes	No	-
<b>Note:</b>	Re bit 03: When the bit is set, when the drive stops, the starting frequency of the motor holding brake is also not fallen below when the actual slip frequency is less than the starting frequency.				


<b>p1302[0...n]</b>	<b>U/f control configuration / U/f config</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	0000 bin	
<b>Description:</b>	Sets the configuration for the U/f control.			

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	03	Motor holding brake with constant stop frequency	Yes	No	-
<b>Note:</b>	<p>Re bit 03: When the bit is set, when the drive stops, the starting frequency of the motor holding brake is also not fallen below when the actual slip frequency is less than the starting frequency.</p> <p>Re bit 04: Field orientation for the closed-loop control of the basis application. The field orientation is activated with the automatic calculation if p0096 is set = 1.</p> <p>Re bit 05 (only effective for p1302.4 = 1): The starting current when accelerating (p1311) generally results in an increase in the absolute current and flux. With p1302.5 = 1 the current is only increased in the direction of the load. This setting is recommended for drives with higher power ratings or drives with extremely fast rates of acceleration.</p>				
<b>p1310[0...n]</b>	<b>Starting current (voltage boost) permanent / I_start (Ua) perm</b>				
	<b>Access level:</b> 2	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300, 6301		
	<b>Min</b> 0.0 [%]	<b>Max</b> 250.0 [%]	<b>Factory setting</b> 50.0 [%]		
<b>Description:</b>	<p>Defines the voltage boost as a [%] referred to the rated motor current (p0305). The magnitude of the permanent voltage boost is reduced with increasing frequency so that at the rated motor frequency, the rated motor voltage is present. The magnitude of the boost in Volt at a frequency of zero is defined as follows: Voltage boost [V] = 1.732 x p0305 (rated motor current [A]) x r0395 (stator/primary section resistance [ohm]) x p1310 (permanent voltage boost [%]) / 100 % At low output frequencies, there is only a low output voltage in order to maintain the motor flux. However, the output voltage can be too low in order to achieve the following:</p> <ul style="list-style-type: none"> <li>- magnetize the induction motor.</li> <li>- hold the load.</li> <li>- compensate for losses in the system.</li> </ul> <p>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. Not for power units PM230, PM250, PM260: For field orientation (p1302.4 = 1, default setting for p0096 = 1), in the vicinity of low output frequencies, a minimum current is impressed with the magnitude of the rated magnetizing current. For p1310 = 0%, a current setpoint is calculated that corresponds to the no-load case. For p1610 = 100 %, a current setpoint is calculated that corresponds to the rated motor current.</p>				
<b>Dependency:</b>	<p>The starting current (voltage boost) is limited by the current limit p0640. The accuracy of the starting current depends on the setting of the stator and feeder cable resistance (p0350, p0352). Refer to: p1300, p1311, p1312, r1315</p>				
<b>Notice:</b>	<p>The starting current (voltage boost) increases the motor temperature (particularly at zero speed).</p>				
<b>Note:</b>	<p>The starting current as a result of 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 &gt; p1311, p1312 For field orientation (p1302.4 = 1, not PM230, PM250, PM260), p1311 and p1312 of the voltage boost are also added in the direction of the load current (non-linear).</p>				

<b>p1311[0...n]</b>	<b>Starting current (voltage boost) when accelerating / I_start accel</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300, 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	250.0 [%]	0.0 [%]
<b>Description:</b>	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 (not for field orientation): Voltage boost [V] = 1.732 * p0305 (rated motor current [A]) x r0395 (stator/primary section resistance [ohm]) x p1311 (voltage boost when accelerating [%]) / 100 %		
<b>Dependency:</b>	The current limit p0640 limits the boost. For field orientation (p1302 bit 4 = 1, not PM230, PM250, PM260), p1311 is preassigned by the automatic calculation. Refer to: p1300, p1310, p1312, r1315		
<b>Notice:</b>	The voltage boost results in a higher motor temperature increase.		
<b>Note:</b>	The voltage boost when accelerating can improve the response to small, positive setpoint changes. Assigning priorities for the voltage boosts: refer to p1310 For field orientation (p1302 bit 4 = 1, not PM230, PM250, PM260), p1311 of the voltage boost are also added in the direction of the load current (non-linear).		
<b>p1312[0...n]</b>	<b>Starting current (voltage boost) when starting / I_start start</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300, 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	250.0 [%]	0.0 [%]
<b>Description:</b>	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.		
<b>Dependency:</b>	The current limit p0640 limits the boost. Refer to: p1300, p1310, p1311, r1315		
<b>Notice:</b>	The voltage boost results in a higher motor temperature increase.		
<b>Note:</b>	The voltage boost when accelerating can improve the response to small, positive setpoint changes. Assigning priorities for the voltage boosts: refer to p1310 For field orientation (p1302. =1, not PM230, PM250, PM260), p1312 of the voltage boost are also added in the direction of the load current (non-linear).		
<b>r1315</b>	<b>Voltage boost total / U_boost total</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Displays the total resulting voltage boost in volt. r1315 = p1310 + p1311 + p1312 For field orientation (p1302.4 = 1, not for PM230, PM250, PM260): r1315 = p1310		
<b>Dependency:</b>	Refer to: p1310, p1311, p1312		

<b>p1320[0...n]</b>	<b>U/f control programmable characteristic frequency 1 / Uf char f1</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]
<b>Description:</b>	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.		
<b>Dependency:</b>	Selects the freely programmable characteristic using p1300 = 3. 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		
<b>Note:</b>	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.		
<b>p1321[0...n]</b>	<b>U/f control programmable characteristic voltage 1 / Uf char U1</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]
<b>Description:</b>	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.		
<b>Dependency:</b>	Selects the freely programmable characteristic using p1300 = 3. Refer to: p1310, p1311, p1320, p1322, p1323, p1324, p1325, p1326, p1327		
<b>Note:</b>	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.		
<b>p1322[0...n]</b>	<b>U/f control programmable characteristic frequency 2 / Uf char f2</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]
<b>Description:</b>	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.		
<b>Dependency:</b>	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		
<b>p1323[0...n]</b>	<b>U/f control programmable characteristic voltage 2 / Uf char U2</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p1310, p1311, p1320, p1321, p1322, p1324, p1325, p1326, p1327		

<b>p1324[0...n]</b>	<b>U/f control programmable characteristic frequency 3 / Uf char f3</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]
<b>Description:</b>	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.		
<b>Dependency:</b>	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		
<b>p1325[0...n]</b>	<b>U/f control programmable characteristic voltage 3 / Uf char U3</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1326, p1327		
<b>p1326[0...n]</b>	<b>U/f control programmable characteristic frequency 4 / Uf char f4</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Hz]	10000.00 [Hz]	0.00 [Hz]
<b>Description:</b>	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.		
<b>Dependency:</b>	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, p1327		
<b>Note:</b>	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.		
<b>p1327[0...n]</b>	<b>U/f control programmable characteristic voltage 4 / Uf char U4</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [Vrms]	10000.0 [Vrms]	0.0 [Vrms]
<b>Description:</b>	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.		
<b>Dependency:</b>	Selects the freely programmable characteristic using p1300 = 3. Refer to: p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1325, p1326		
<b>Note:</b>	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.		

<b>p1330[0...n]</b>	<b>CI: U/f control independent voltage setpoint / Uf U_set independ.</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> p2001	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the voltage setpoint for U/f control with an independent voltage setpoint (p1300 = 19).		
<b>Dependency:</b>	Selects the U/f control with independent voltage setpoint via p1300 = 19. Refer to: p1300		
<b>p1331[0...n]</b>	<b>Voltage limiting / U_lim</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6300
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	50.00 [Vrms]	2000.00 [Vrms]	1000.00 [Vrms]
<b>Description:</b>	Limiting the voltage setpoint. This means that the output voltage can be reduced with respect to the calculated maximum voltage r0071 and the start of field weakening.		
<b>Note:</b>	The output voltage is only limited if, as a result of p1331, the maximum output voltage (r0071) is fallen below.		
<b>p1333[0...n]</b>	<b>U/f control FCC starting frequency / U/f FCC f_start</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]
<b>Description:</b>	Sets the starting frequency at which FCC (Flux Current Control) is activated.		
<b>Dependency:</b>	The correct operating mode must be set (p1300 = 1, 6).		
<b>Warning:</b>	An excessively low value can result in instability.		
			
<b>Note:</b>	For p1333 = 0 Hz, the FCC starting frequency is automatically set to 6 % of the rated motor frequency.		
<b>p1334[0...n]</b>	<b>U/f control slip compensation starting frequency / Slip comp start</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]
<b>Description:</b>	Sets the starting frequency of the slip compensation.		
<b>Note:</b>	For p1334 = 0, the starting frequency of the slip compensation is automatically set to 6 % of the rated motor frequency.		
<b>p1335[0...n]</b>	<b>Slip compensation scaling / Slip comp scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300, 6310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	600.0 [%]	0.0 [%]
<b>Description:</b>	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.		

## 2 Parameters

### 2.2 List of parameters

**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. p0300).

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<b>p1336[0...n]</b>	<b>Slip compensation limit value / Slip comp lim val</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [%]	600.00 [%]	250.00 [%]
<b>Description:</b>	Sets the limit value for slip compensation in [%] referred to r0330 (motor rated slip).		

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<b>r1337</b>	<b>CO: Actual slip compensation / Slip comp act val</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Displays the actual compensated slip [%] referred to r0330 (rated motor slip).		
<b>Dependency:</b>	p1335 > 0 %: Slip compensation active. Refer to: p1335		

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<b>p1338[0...n]</b>	<b>U/f mode resonance damping gain / Uf Res_damp gain</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300, 6310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	100.00	0.00
<b>Description:</b>	Sets the gain for resonance damping for U/f control.		
<b>Dependency:</b>	Refer to: p1300, p1339, p1349		
<b>Note:</b>	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.		

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<b>p1339[0...n]</b>	<b>U/f mode resonance damping filter time constant / Uf Res_damp T</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1.00 [ms]	1000.00 [ms]	20.00 [ms]
<b>Description:</b>	Sets the filter time constant for resonance damping for U/f control.		
<b>Dependency:</b>	Refer to: p1300, p1338, p1349		



<b>p1340[0...n]</b>	<b>I_max frequency controller proportional gain / I_max_ctrl Kp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300
	<b>Min</b> 0.000	<b>Max</b> 0.500	<b>Factory setting</b> 0.000
<b>Description:</b>	Sets the proportional gain of the I_max frequency controller. The I_max controller reduces the drive converter output current if the maximum current (r0067) is exceeded. In the U/f operating modes (p1300) for the I_max control, one controller is used that acts on the output frequency and one controller that acts on the output voltage. The frequency controller reduces the current by decreasing the converter output frequency. The frequency is reduced down to a minimum value (equaling twice rated slip). If the overcurrent condition cannot be successfully resolved using this measure, then the drive converter output voltage is reduced using the I_max voltage controller. Once the overcurrent condition has been resolved, the drive is accelerated along the ramp set in p1120 (ramp-up time).		
<b>Dependency:</b>	In the U/f modes (p1300) for textile applications and for external voltage setpoints, only the I_max voltage controller is used.		
<b>Notice:</b>	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. The drive is switched off when the overcurrent limits are exceeded.		
<b>Note:</b>	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.		
<b>p1341[0...n]</b>	<b>I_max frequency controller integral time / I_max_ctrl Tn</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300
	<b>Min</b> 0.000 [s]	<b>Max</b> 50.000 [s]	<b>Factory setting</b> 0.300 [s]
<b>Description:</b>	Sets the integral time for the I_max frequency controller.		
<b>Dependency:</b>	Refer to: p1340		
<b>Note:</b>	When p1341 = 0, the current limiting controller influencing the frequency is de-activated and only the current limiting controller influencing the output voltage remains active (p1345, p1346). In the case of power units with regenerative feedback (PM250, PM260), current limitation control for a regenerative load is always implemented by influencing the frequency. This current limiting function is de-activated with p1340 = p1341 = 0.		
<b>r1343</b>	<b>CO: I_max controller frequency output / I_max_ctrl f_outp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6300
	<b>Min</b> - [rpm]	<b>Max</b> - [rpm]	<b>Factory setting</b> - [rpm]
<b>Description:</b>	Displays the effective frequency limit.		
<b>Dependency:</b>	Refer to: p1340		
<b>r1344</b>	<b>I_max controller voltage output / I_max_ctrl U_outp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6300
	<b>Min</b> - [Vrms]	<b>Max</b> - [Vrms]	<b>Factory setting</b> - [Vrms]
<b>Description:</b>	Displays the amount by which the converter output voltage is reduced.		
<b>Dependency:</b>	Refer to: p1340		

<b>p1345[0...n]</b>	<b>I_max voltage controller proportional gain / I_max_U_ctrl Kp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300, 7017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000	100000.000	0.000
<b>Description:</b>	Sets the proportional gain for the I_max voltage controller.		
<b>Dependency:</b>	Refer to: p1340		
<b>Note:</b>	The controller settings are also used in the current controller of the DC braking (refer to p1232).		
<b>p1346[0...n]</b>	<b>I_max voltage controller integral time / I_max_U_ctrl Tn</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300, 7017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	50.000 [s]	0.030 [s]
<b>Description:</b>	Sets the integral time for the I_max voltage controller.		
<b>Dependency:</b>	Refer to: p1340		
<b>Note:</b>	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.		
<b>r1348</b>	<b>CO: U/f control Eco factor actual value / U/f Eco fac act v</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300, 6301
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Displays the economic factor determined for optimizing motor consumption.		
<b>Dependency:</b>	Refer to: p1335		
<b>Note:</b>	The value is only determined for operating modes with Economic (p1300 = 4, 7).		
<b>p1349[0...n]</b>	<b>U/f mode resonance damping maximum frequency / Uf res_damp f_max</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]
<b>Description:</b>	Sets the maximum output frequency for resonance damping for U/f control. Resonance damping is inactive above this output frequency.		
<b>Dependency:</b>	Refer to: p1338, p1339		
<b>Note:</b>	For p1349 = 0, the changeover limit is automatically set to 95 % of the rated motor frequency - however, to a max. of 45 Hz.		
<b>p1350[0...n]</b>	<b>U/f control soft start / U/f soft start</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6300
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	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).		

<b>Value:</b>	0: OFF 1: ON
<b>Note:</b>	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

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<b>p1351[0...n]</b>	<b>CO: Motor holding brake starting frequency / Brake f_start</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-300.00 [%]	300.00 [%]	0.00 [%]
<b>Description:</b>	Sets the frequency setting value at the slip compensation output for starting up with motor holding brake.		
<b>Dependency:</b>	When setting p1351 > 0, then slip compensation is automatically activated (p1335 = 100 %). Refer to: p1302, p1352		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>Note:</b>	Connected with p1352 a value of 100% corresponds to the motor rated slip (r0330).		

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<b>p1352[0...n]</b>	<b>CI: Motor holding brake starting frequency signal source / Brake f_start</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1351[0]
<b>Description:</b>	Sets the signal source for the frequency setting value at the slip compensation output for starting up with motor holding brake.		
<b>Dependency:</b>	Refer to: p1216		
<b>Note:</b>	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.		

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<b>p1400[0...n]</b>	<b>Speed control configuration / n_ctrl config</b>				
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6490		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 0000 0000 0000 1000 0000 0010 0001 bin		
<b>Description:</b>	Sets the configuration for the closed-loop speed control.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Automatic Kp/Tn adaptation active	Yes	No	6040
	01	Sensorless vector control freeze I comp	Yes	No	6040
	05	Kp/Tn adaptation active	Yes	No	6040
	06	Free Tn adaptation active	Yes	No	6050
	14	Torque pre-control	Always active	For n_ctrl enab	6060
	15	Sensorless vector control speed pre-control	Yes	No	6030
	20	Acceleration model	ON	OFF	6031

## 2 Parameters

### 2.2 List of parameters

**Note:** Re bit 01:  
When the bit is set, the I component of the speed controller is kept when changing into the open-loop controlled mode.  
Re bit 20: The acceleration model for the speed setpoint is only active if p1496 is not zero.

p1400[0...n]	Speed control configuration / n_ctrl config		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250, PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6490
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0000 0000 0000 0000 1000 0000 0010 0001 bin

**Description:** Sets the configuration for the closed-loop speed control.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Automatic Kp/Tn adaptation active	Yes	No	6040
	01	Sensorless vector control freeze I comp	Yes	No	6040
	05	Kp/Tn adaptation active	Yes	No	6040
	06	Free Tn adaptation active	Yes	No	6050
	14	Torque pre-control	Always active	For n_ctrl enab	6060
	15	Sensorless vector control speed pre-control	Yes	No	6030
	18	Moment of inertia estimator active	Yes	No	6030
	20	Acceleration model	ON	OFF	6031
	22	Obtain moment of inertia estimator value for pulse inhibit	Yes	No	6030

**Note:** Re bit 01:  
When the bit is set, the I component of the speed controller is kept when changing into the open-loop controlled mode.  
Re bit 20:  
The acceleration model for the speed setpoint is only active for encoderless vector control if p1496 is not zero.

p1401[0...n]	Flux control configuration / Flux ctrl config		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6491
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0000 0110 bin

**Description:** Sets the configuration for flux setpoint control

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Flux setpoint soft starting active	Yes	No	6722
	01	Flux setpoint differentiation active	Yes	No	6723
	02	Flux build-up control active	Yes	No	6722, 6723
	06	Quick magnetizing	Yes	No	6722
	07	Pre-control speed limitation	Yes	No	6640

**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).

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### p1402[0...n] Closed-loop current control and motor model configuration / I\_ctrl config

<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	0000 bin

**Description:** Sets the configuration for the closed-loop control and the motor model.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	02	Current controller adaptation active	Yes	No	-

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### r1406.4...15 CO/BO: Control word speed controller / STW n\_ctrl

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2520
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Display and BICO output for the control word of the speed controller.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	04	Hold speed controller I component	Yes	No	6040
	05	Set speed controller I component	Yes	No	6040
	11	Droop enable	Yes	No	6030
	12	Torque control active	Yes	No	6060
	15	Set speed adaptation controller I component	Yes	No	-

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### r1407.0...26 CO/BO: Status word speed controller / ZSW n\_ctrl

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2522
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Display and BICO output for the status word of the speed controller.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	U/f control active	Yes	No	-
	01	Encoderless operation active	Yes	No	-
	02	Torque control active	Yes	No	6030, 6060, 8011
	03	Speed control active	Yes	No	6040
	05	Speed controller I component frozen	Yes	No	6040
	06	Speed controller I component set	Yes	No	6040
	07	Torque limit reached	Yes	No	6060
	08	Upper torque limit active	Yes	No	6060
	09	Lower torque limit active	Yes	No	6060
	10	Droop enabled	Yes	No	6030
	11	Speed setpoint limited	Yes	No	6030
	12	Ramp-function generator set	Yes	No	-
	13	Encoderless operation due to a fault	Yes	No	-

## 2 Parameters

### 2.2 List of parameters

14	I/f control active	Yes	No	-
15	Torque limit reached (without pre-control)	Yes	No	6060
17	Speed limiting control active	Yes	No	6640
23	Acceleration model activated	Yes	No	-
24	Moment of inertia estimator active	Yes	no	-
25	Load estimate active	Yes	no	-
26	Moment of inertia estimator stabilized	Yes	No	-

#### r1408.0...14

#### CO/BO: Status word current controller / ZSW I\_ctrl

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2530
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

#### Description:

Display and BICO output for the status word of the current controller.

#### Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Current controller act	Active	Not active	-
01	Id control I component limiting	Active	Not active	6714
03	Voltage limiting	Active	Not active	6714
10	Speed adaptation limiting	Active	Not active	-
12	Motor stalled	Yes	No	-
13	Separately excited synchronous motor is excited	Yes	No	-
14	Current model FEM: magnetizing excitation current limited to 0	Yes	No	-

#### p1416[0...n]

#### Speed setpoint filter 1 time constant / n\_set\_filt 1 T

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6020, 6030
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.00 [ms]	5000.00 [ms]	0.00 [ms]

#### Description:

Sets the time constant for the speed setpoint filter 1 (PT1).

#### r1438

#### CO: Speed controller speed setpoint / n\_ctrl n\_set

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 3001, 6020, 6031
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [rpm]	- [rpm]	- [rpm]

#### Description:

Display and connector output of the speed setpoint after setpoint limiting for the P component of the speed controller. For U/f operation, the value that is displayed is of no relevance.

#### Dependency:

Refer to: r1439

#### Note:

In the standard state (the reference model is de-activated), r1438 = r1439.

#### r1439

#### Speed setpoint I component / n\_set I\_comp

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 5030, 5040, 6031
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [rpm]	- [rpm]	- [rpm]

#### 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), r1439 = r1438.

<b>r1444</b>	<b>Speed controller speed setpoint steady-state (static) / n_ctrl n_set stat</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 5030
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	Displays the sum of all speed setpoints that are present. The following sources are available for the displayed setpoint: - setpoint at the ramp-function generator input (r1119). - speed setpoint 1 (p1155). - speed setpoint 2 (p1160). - speed setpoint for the speed pre-control (p1430). - setpoint from DSC (for DSC active). - setpoint via PC (for master control active).		
<b>Dependency:</b>	Refer to: r1119, p1155, p1160		
<b>r1445</b>	<b>CO: Actual speed smoothed / n_act smooth</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6040
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	Display and connector output for the actual smoothed speed actual value of the speed control.		
<b>p1452[0...n]</b>	<b>Speed controller speed actual value smoothing time (sensorless) / n_C n_act T_s SL</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6020, 6040
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [ms]	32000.00 [ms]	10.00 [ms]
<b>Description:</b>	Sets the smoothing time for the actual speed of the speed controller for encoderless closed-loop speed control.		
<b>Note:</b>	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).		
<b>r1454</b>	<b>CO: Speed controller system deviation I component / n_ctrl sys dev Tn</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6040
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	Display and connector output for the system deviation of the I component of the speed controller.		
<b>p1455[0...n]</b>	<b>CI: Speed controller P gain adaptation signal / n_ctr adapt_sig Kp</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the source for the adaptation signal to additionally adapt the P gain of the speed controller.		
<b>Dependency:</b>	Refer to: p1456, p1457, p1458, p1459		

## 2 Parameters

### 2.2 List of parameters

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<b>p1456[0...n]</b>	<b>Speed controller P gain adaptation lower starting point / n_ctrl AdaptKpLow</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [%]	400.00 [%]	0.00 [%]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p1455, p1457, p1458, p1459		
<b>Note:</b>	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.		

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<b>p1457[0...n]</b>	<b>Speed controller P gain adaptation upper starting point / n_ctrl AdaptKp up</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [%]	400.00 [%]	0.00 [%]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p1455, p1456, p1458, p1459		
<b>Note:</b>	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.		

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<b>p1458[0...n]</b>	<b>Adaptation factor lower / Adapt_factor lower</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	200000.0 [%]	100.0 [%]
<b>Description:</b>	Sets the adaptation factor before the adaptation range (0 % ... p1456) to additionally adapt the P gain of the speed/velocity controller.		
<b>Dependency:</b>	Refer to: p1455, p1456, p1457, p1459		
<b>Note:</b>	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.		

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<b>p1459[0...n]</b>	<b>Adaptation factor upper / Adapt_factor upper</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	200000.0 [%]	100.0 [%]
<b>Description:</b>	Sets the adaptation factor after the adaptation range (> p1457) to additionally adapt the P gain of the speed/velocity controller.		
<b>Dependency:</b>	Refer to: p1455, p1456, p1457, p1458		
<b>Note:</b>	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.		

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<b>p1461[0...n]</b>	<b>Speed controller Kp adaptation speed upper scaling / n_ctr Kp n up scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	200000.0 [%]	100.0 [%]
<b>Description:</b>	Sets the P gain of the speed controller for the upper adaptation speed range (> p1465). The entry is made referred to the P gain for the lower adaptation speed range of the speed controller (% referred to p1470).		
<b>Dependency:</b>	Refer to: p1464, p1465		
<b>Note:</b>	If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition p1464, then the controller gain below p1465 is adapted with p1461. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.		
<b>p1463[0...n]</b>	<b>Speed controller Tn adaptation speed upper scaling / n_ctr Tn n up scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	200000.0 [%]	100.0 [%]
<b>Description:</b>	Sets the integral time of the speed controller after the adaptation speed range (> p1465). The entry is made referred to the integral time for the lower adaptation speed range of the speed controller (% referred to p1472).		
<b>Dependency:</b>	Refer to: p1464, p1465		
<b>Note:</b>	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.		
<b>p1464[0...n]</b>	<b>Speed controller adaptation speed lower / n_ctrl n lower</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]
<b>Description:</b>	Sets the lower adaptation speed of the speed controller. No adaptation is effective below this speed.		
<b>Dependency:</b>	Refer to: p1461, p1463, p1465		
<b>Note:</b>	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.		
<b>p1465[0...n]</b>	<b>Speed controller adaptation speed upper / n_ctrl n upper</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6050
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]
<b>Description:</b>	Sets the upper adaptation speed of the speed controller. No adaptation is effective above this speed. For the proportional gain, p1470 x p1461 is effective. For the integral time, p1472 x p1463 is effective.		
<b>Dependency:</b>	Refer to: p1461, p1463, p1464		

## 2 Parameters

### 2.2 List of parameters

**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.

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<b>p1466[0...n]</b>	<b>CI: Speed controller P-gain scaling / n_ctrl Kp scal</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32	
<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6050	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	1	

**Description:** Sets the signal source for the scaling of the P gain of the speed controller. This also makes the effective P gain (including adaptations) scalable.

---

<b>r1468</b>	<b>CO: Speed controller P-gain effective / n_ctr Kp eff</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6040	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	

**Description:** Displays the effective P gain of the speed controller.

**Dependency:** The connector output signal r1468 is increased by a factor of 100 in order to improve the resolution.

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<b>r1469</b>	<b>Speed controller integral time effective / n_ctr Tn eff</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 5040, 5042, 6040	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [ms]	- [ms]	- [ms]	

**Description:** Displays the effective integral time of the speed controller.

---

<b>p1470[0...n]</b>	<b>Speed controller encoderless operation P-gain / n_ctrl SL Kp</b>		
<b>Access level:</b> 2	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6040, 6050	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.000	999999.000	0.300	

**Description:** Sets the P gain for encoderless operation for the speed controller.

**Note:** The product p0341 x p0342 is taken into account when automatically calculating the speed controller (p0340 = 1, 3, 4).

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<b>p1472[0...n]</b>	<b>Speed controller encoderless operation integral time / n_ctrl SL Tn</b>		
<b>Access level:</b> 2	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6040, 6050	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.0 [ms]	100000.0 [ms]	20.0 [ms]	

**Description:** Set the integral time for encoderless operation for the speed controller.

**Note:** The integral component is stopped if the complete controller output or the sum of controller output and torque pre-control reach the torque limit.

<b>p1475[0...n]</b>	<b>CI: Speed controller torque setting value for motor holding brake / n_ctrl M_sv MHB</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6040
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the torque setting value when starting up with motor holding brake.		
<b>Recommend.:</b>	To hold the actual torque when stopping the motor, you are advised to set p1400 bit 1 = 1. As a result, the integral component of the speed controller is frozen when changing to the open-loop controlled operating range.		
<b>Dependency:</b>	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.		
<b>Note:</b>	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).		
<b>p1476[0...n]</b>	<b>BI: Speed controller hold integrator / n_ctrl integ stop</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2520, 6040
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source to hold the integrator for the speed controller.		
<b>p1477[0...n]</b>	<b>BI: Speed controller set integrator value / n_ctrl integ set</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2520, 6040
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source to set the integrator setting value (p1478).		
<b>Dependency:</b>	Refer to: p1478, p1479		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>p1478[0...n]</b>	<b>CI: Speed controller integrator setting value / n_ctr integ_setVal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6040
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the integrator setting value for the velocity controller. The signal to set this integrator setting value is interconnected via p1477.		
<b>Dependency:</b>	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).		

## 2 Parameters

### 2.2 List of parameters

Refer to: p1477, p1479

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

---

<b>p1479[0...n]</b>	<b>CI: Speed controller integrator setting value scaling / n_ctrl I_val scal</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32	
<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6040	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	1	

**Description:** Sets the signal source for scaling the integrator setting value (p1478) of the speed controller.

**Dependency:** Refer to: p1477, p1478

---

<b>r1482</b>	<b>CO: Speed controller I torque output / n_ctrl I-M_outp</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -	
<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 5040, 5042, 5210, 6030, 6040	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [Nm]	- [Nm]	- [Nm]	

**Description:** Display and connector output for the torque setpoint at the output of the I speed controller.

---

<b>p1486[0...n]</b>	<b>CI: Droop compensation torque / Droop M_comp</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32	
<b>Can be changed:</b> T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6030	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	0	

**Description:** Sets the signal source for the compensation torque to be output within the droop calculation.

This parameter should be interconnected with the torque setpoint of the drive (corresponding to the selection p1488), with which load equalization should be performed.

---

<b>p1487[0...n]</b>	<b>Droop compensation torque scaling / Droop M_comp scal</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6030	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-2000.0 [%]	2000.0 [%]	100.0 [%]	

**Description:** Sets the scaling for the compensation torque within the droop calculation.

---

<b>p1488[0...n]</b>	<b>Droop input source / Droop input source</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6030	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0	3	0	

**Description:** Sets the source for droop feedback.

With increasing torque, the speed setpoint is reduced (enabled using p1492), so that for mechanically coupled drives a load equalization (load compensation) is obtained.

A load difference compensation is also possible, if p1486 is interconnected with the torque setpoint of the other drive.

**Value:**

- 0: Droop feedback not connected
- 1: Droop from torque setpoint
- 2: Droop from speed controller output
- 3: Droop from integral output speed controller

**Dependency:** Refer to: p1486, p1487, p1489, r1490, p1492

**Caution:**

For active acceleration precontrol of the speed controller (refer to p1496), it is not recommended that p1488 is set to 1, as this could result in positive coupling effects. Instead of this, as source of the droop feedback, the output signal of the speed controller should be used, which generally sets the load torque.

**p1489[0...n]****Droop feedback scaling / Droop scal**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6030
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.000	0.500	0.050

**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 %.

**r1490****CO: Droop feedback speed reduction / Droop n\_reduction**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6030
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [rpm]	- [rpm]	- [rpm]

**Description:**

Displays the output signal of the droop calculation. The droop feedback result is subtracted from the speed setpoint when activated (p1492).

**Dependency:**

Refer to: p1486, p1487, p1488, p1489, p1492

**p1492[0...n]****BI: Droop feedback enable / Droop enable**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2520, 6030
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	0

**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, scaled / M\_mom inert tot\_sc**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> 25_1	<b>Unit selection:</b> p0100	<b>Func. diagram:</b> 6031
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [kgm <sup>2</sup> ]	- [kgm <sup>2</sup> ]	- [kgm <sup>2</sup> ]

**Description:**

Display and connector output for the parameterized total moment of inertia.  
The value is calculated with ((p0341 \* p0342) \* p1496).

**p1496[0...n]****Acceleration pre-control scaling / a\_prectrl scal**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6020, 6031
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.0 [%]	10000.0 [%]	0.0 [%]

**Description:**

Sets the scaling for the acceleration pre-control of the speed/velocity controller.

**Dependency:**

Refer to: p0341, p0342

## 2 Parameters

### 2.2 List of parameters

**Warning:**



The acceleration precontrol r1518 is kept at the old value if the ramp-function generator tracking (r1199.5) is active or the ramp-function generator output is set (r1199.3). This is used to avoid torque peaks. Depending on the application, it may therefore be necessary to disable the ramp-function generator tracking (p1145 = 0) or the acceleration precontrol (p1496 = 0).

The acceleration precontrol is set to zero, if the Vdc control is active (r0056.14/15).

**Note:**

The parameter is set to 100% by the rotating measurement (refer to p1960).

The acceleration pre-control may not be used if the speed setpoint manifests significant ripple (e.g. analog setpoint) and the rounding-off in the speed ramp-function generator is disabled.

We also recommend that the pre-control mode is not used if there is gearbox backlash.

#### p1498[0...n]

#### Load moment of inertia / Load M\_inertia

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> 25_1	<b>Unit selection:</b> p0100	<b>Func. diagram:</b> 5042, 5210
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.00000 [kgm <sup>2</sup> ]	100000.00000 [kgm <sup>2</sup> ]	0.00000 [kgm <sup>2</sup> ]

**Description:**

Sets the load moment of inertia.

**Note:**

(p0341 \* p0342) + p1498 influence the speed/torque pre-control in encoderless operation.

#### p1499[0...n]

#### Accelerating for torque control scaling / a for M\_ctrl scal

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6030
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.0 [%]	400.0 [%]	100.0 [%]

**Description:**

Sets the scaling for the acceleration integrator at low speeds (only for encoderless torque control).

**Dependency:**

Refer to: p0341, p0342

#### p1500[0...n]

#### Torque setpoint selection / M\_set sel

CU240B-2

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	66	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
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

**Notice:**

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

<b>p1500[0...n]</b>	<b>Torque setpoint selection / M_set sel</b>		
CU240B-2_DP	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	66	6
<b>Description:</b>	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.		
<b>Value:</b>	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		
<b>Dependency:</b>	When changing this parameter, the following settings are influenced: Refer to: p1503, p1511		
<b>Notice:</b>	When executing a specific macro, the corresponding programmed settings are made and become active.		

<b>p1500[0...n]</b>	<b>Torque setpoint selection / M_set sel</b>		
CU240E-2_DP	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2_DP_F	<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2 PN	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	77	6
<b>Description:</b>	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.		
<b>Value:</b>	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		

## 2 Parameters

### 2.2 List of parameters

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

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

---

<b>p1500[0...n]</b>	<b>Torque setpoint selection / M_set sel</b>		
CU240E-2	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2_F	<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	77	2
<b>Description:</b>	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.		
<b>Value:</b>	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		
<b>Dependency:</b>	When changing this parameter, the following settings are influenced: Refer to: p1503, p1511		
<b>Notice:</b>	When executing a specific macro, the corresponding programmed settings are made and become active.		

---

<b>p1501[0...n]</b>	<b>BI: Change over between closed-loop speed/torque control / Changeov n/M_ctrl</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2520, 6020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for toggling between speed and torque control. 0 signal: Closed-loop speed control 1 signal: Closed-loop torque control		
<b>Dependency:</b>	The input connectors to enter the torque are provided using p1511, p1512 and p1513. Refer to: p1300		
<b>Notice:</b>	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).		
<b>Note:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		



<b>p1502[0...n]</b>	<b>BI: Freeze moment of inertia estimator / J_estim freeze</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source to freeze the estimated moment of inertia. 0 signal: Moment of inertia estimator active 1 signal: Determined moment of inertia frozen.		
<b>Dependency:</b>	Refer to: p1300		
<b>Note:</b>	Only active when the "moment of inertia estimator" function module is active (r0108.10 = 1) and p1400.18 = 1. For operation with encoder, in addition, p1402.4 must be set to 1.		
<b>p1503[0...n]</b>	<b>CI: Torque setpoint / M_set</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6020, 6060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the torque setpoint for torque control.		
<b>Note:</b>	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.		
<b>r1508</b>	<b>CO: Torque setpoint before supplementary torque / M_set bef. M_suppl</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6030, 6060, 6722
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Nm]	- [Nm]	- [Nm]
<b>Description:</b>	Displays the torque setpoint before entering the supplementary torque. For closed-loop speed control, r1508 corresponds to the speed controller output; for closed-loop torque control, r1508 corresponds to the torque setpoint of the signal source assigned in p1503.		
<b>p1511[0...n]</b>	<b>CI: Supplementary torque 1 / M_suppl 1</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6020, 6060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for supplementary torque 1.		
<b>p1512[0...n]</b>	<b>CI: Supplementary torque 1 scaling / M_suppl 1 scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 5060, 6060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for scaling the supplementary torque 1.		

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<b>p1513[0...n]</b>	<b>CI: Supplementary torque 2 / M_suppl 2</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6020, 6060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for supplementary torque 2.		

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<b>p1514[0...n]</b>	<b>Supplementary torque 2 scaling / M_suppl 2 scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6020, 6060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-2000.0 [%]	2000.0 [%]	100.0 [%]
<b>Description:</b>	Sets the scaling for supplementary torque 2.		

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<b>r1515</b>	<b>Supplementary torque total / M_suppl total</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6020, 6060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Nm]	- [Nm]	- [Nm]
<b>Description:</b>	Displays the total supplementary torque. The displayed value is the total of supplementary torque values 1 and 2 (p1511, p1512, p1513, p1514).		

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<b>r1516</b>	<b>CO: Supplementary torque and acceleration torque / M_suppl + M_accel</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Nm]	- [Nm]	- [Nm]
<b>Description:</b>	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).		

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<b>p1517[0...n]</b>	<b>Accelerating torque smoothing time constant / M_accel T_smooth</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [ms]	100.00 [ms]	4.00 [ms]
<b>Description:</b>	Sets the smoothing time constant of the accelerating torque.		
<b>Note:</b>	The acceleration pre-control is inhibited if the smoothing is set to the maximum value.		

---

<b>r1518[0...1]</b>	<b>CO: Accelerating torque / M_accel</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Nm]	- [Nm]	- [Nm]
<b>Description:</b>	Displays the accelerating torque for pre-control of the speed controller.		

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

**Dependency:** Refer to: p0341, p0342, p1496

---

<b>p1520[0...n]</b>	<b>CO: Torque limit upper / M_max upper</b>		
<b>Access level:</b> 2	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6020, 6630	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-1000000.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]	

**Description:** Sets the fixed, upper torque limit.

**Dependency:** Refer to: p1521, p1522, p1523, r1538, r1539

**Danger:** Negative values when setting the upper torque limit (p1520 < 0) can result in the motor accelerating in an uncontrollable fashion.



**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

**Note:** The torque limit is limited to 400% of the rated motor torque. When automatically calculating the motor/closed-loop control parameters (p0340), the torque limit is set to match the current limit (p0640).

---

<b>p1521[0...n]</b>	<b>CO: Torque limit lower / M_max lower</b>		
<b>Access level:</b> 2	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6020, 6630	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-20000000.00 [Nm]	1000000.00 [Nm]	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 uncontrollable fashion.



**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

**Note:** The torque limit is limited to 400% of the rated motor torque. When automatically calculating the motor/closed-loop control parameters (p0340), the torque limit is set to match the current limit (p0640).

---

<b>p1522[0...n]</b>	<b>CI: Torque limit upper / M_max upper</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32	
<b>Can be changed:</b> T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6630	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	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.




---

<b>p1523[0...n]</b>	<b>CI: Torque limit lower / M_max lower</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32	
<b>Can be changed:</b> T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6020, 6630	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	1521[0]	

**Description:** Sets the signal source for the lower torque limit.

**Dependency:** Refer to: p1520, p1521, p1522

## 2 Parameters

### 2.2 List of parameters

**Danger:**



Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

---

#### p1524[0...n]

#### CO: Torque limit upper scaling / M\_max upper scal

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6630
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-2000.0 [%]	2000.0 [%]	100.0 [%]

**Description:**

Sets the scaling for the upper torque limit.

**Notice:**

A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

**Note:**

This parameter can be freely interconnected.

The value has the meaning stated above if it is interconnected from connector input p1528.

---

#### p1525[0...n]

#### CO: Torque limit lower scaling / M\_max lower scal

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6630
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-2000.0 [%]	2000.0 [%]	100.0 [%]

**Description:**

Sets the scaling for the lower torque limit.

**Notice:**

A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

**Note:**

This parameter can be freely interconnected.

The value has the meaning stated above if it is interconnected from connector input p1528.

---

#### r1526

#### CO: Torque limit upper without offset / M\_max up w/o offs

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -
<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6060, 6630, 6640
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [Nm]	- [Nm]	- [Nm]

**Description:**

Display and connector output for the upper torque limit of all torque limits without offset.

**Dependency:**

Refer to: p1520, p1521, p1522, p1523, p1528, p1529

---

#### r1527

#### CO: Torque limit lower without offset / M\_max low w/o offs

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -
<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6060, 6630, 6640
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [Nm]	- [Nm]	- [Nm]

**Description:**

Display and connector output for the lower torque limit of all torque limits without offset.

**Dependency:**

Refer to: p1520, p1521, p1522, p1523, p1528, p1529

---

#### p1528[0...n]

#### CI: Torque limit upper scaling / M\_max upper scal

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6630
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	1524[0]

**Description:**

Sets the signal source for the scaling of the upper torque limit in p1522.

**Danger:**



For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

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

---

<b>p1529[0...n]</b>	<b>Cl: Torque limit lower scaling / M_max lower scal</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32	
<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6630	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	1525[0]	

**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.

---

<b>p1530[0...n]</b>	<b>Power limit motoring / P_max mot</b>		
<b>Access level:</b> 2	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> 14_5	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6640	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.00 [kW]	100000.00 [kW]	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.

---

<b>p1531[0...n]</b>	<b>Power limit regenerative / P_max gen</b>		
<b>Access level:</b> 2	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> 14_5	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6640	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-100000.00 [kW]	-0.01 [kW]	-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].

---

<b>r1533</b>	<b>Current limit torque-generating total / Iq_max total</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -	
<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6640	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [Arms]	- [Arms]	- [Arms]	

**Description:** Displays the maximum torque/force generating current as a result if all current limits.

<b>r1536[0...1]</b>	<b>Current limit maximum torque-generating current / Isq_max</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6640, 6710
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Displays the maximum limit for the torque-generating current component. Index 0 indicates the signal limited by the Vdc controller.		
<b>Index:</b>	[0] = Limited [1] = Unlimited		
<b>r1537[0...1]</b>	<b>Current limit minimum torque-generating current / Isq_min</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6640, 6710
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Displays the minimum limit for the torque-generating current component. Index 0 indicates the signal limited by the Vdc controller.		
<b>Index:</b>	[0] = Limited [1] = Unlimited		
<b>r1538</b>	<b>CO: Upper effective torque limit / M_max upper eff</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6020, 6640
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Nm]	- [Nm]	- [Nm]
<b>Description:</b>	Display and connector output for the actual effective upper torque limit.		
<b>Note:</b>	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.		
<b>r1539</b>	<b>CO: Lower effective torque limit / M_max lower eff</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6020, 6640
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Nm]	- [Nm]	- [Nm]
<b>Description:</b>	Display and connector output for the actual effective lower torque limit.		
<b>Note:</b>	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.		
<b>r1547[0...1]</b>	<b>CO: Torque limit for speed controller output / M_max outp n_ctrl</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2003	<b>Dyn. index:</b> -
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Nm]	- [Nm]	- [Nm]
<b>Description:</b>	Displays the torque limit to limit the speed controller output.		

**Index:** [0] = Upper limit  
[1] = Lower limit

---

<b>r1548[0...1]</b>	<b>CO: Stall current limit torque-generating maximum / Isq_max stall</b>
<b>Access level:</b> 4	<b>Calculated:</b> -
<b>Can be changed:</b> -	<b>Scaling:</b> p2002
<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505
<b>Min</b>	<b>Max</b>
- [Arms]	- [Arms]
	<b>Factory setting</b>
	- [Arms]

**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

---

<b>p1552[0...n]</b>	<b>CI: Torque limit upper scaling without offset / M_max up w/o offs</b>
<b>Access level:</b> 3	<b>Calculated:</b> -
<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT
<b>Units group:</b> -	<b>Unit selection:</b> -
<b>Min</b>	<b>Max</b>
-	-
	<b>Factory setting</b>
	1

**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.

---

<b>p1553[0...n]</b>	<b>Stall limit scaling / Stall limit scal</b>
<b>Access level:</b> 4	<b>Calculated:</b> -
<b>Can be changed:</b> U, T	<b>Scaling:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -
<b>Min</b>	<b>Max</b>
80.0 [%]	130.0 [%]
	<b>Factory setting</b>
	100.0 [%]

**Description:** Sets the scaling of the stall limit for the start of field weakening.

**Danger:** If the stall current limit is increased, then the q current setpoint can exceed the stall limit; as a consequence, a hysteresis effect can occur when loading and unloading.




---

<b>p1554[0...n]</b>	<b>CI: Torque limit lower scaling without offset / M_max low w/o offs</b>
<b>Access level:</b> 3	<b>Calculated:</b> -
<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT
<b>Units group:</b> -	<b>Unit selection:</b> -
<b>Min</b>	<b>Max</b>
-	-
	<b>Factory setting</b>
	1

**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.

---

<b>p1560[0...n]</b>	<b>Moment of inertia estimator accelerating torque threshold value / J_est M thresh</b>
<b>Access level:</b> 3	<b>Calculated:</b> -
<b>Can be changed:</b> C(3), U, T	<b>Scaling:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -
<b>Min</b>	<b>Max</b>
0.10 [%]	100.00 [%]
	<b>Factory setting</b>
	10.00 [%]

**Description:** Sets the threshold for the accelerating torque for the moment of inertia estimator.

The moment of inertia estimator is active above this threshold.

The value is referred to the rated torque (r0333).

**Dependency:** Refer to: p1400, p1561, p1562

**Note:** The moment of inertia estimation is inaccurate at very low accelerating torques/accelerating forces. As a consequence, below this threshold, the estimator does not provide any new values.

<b>p1561[0...n]</b>	<b>Moment of inertia estimator change time moment of inertia / J_est t J</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10.00 [ms]	5000.00 [ms]	500.00 [ms]
<b>Description:</b>	Sets the change time for the moment of inertia for the moment of inertia estimator. Lower values mean that faster changes are possible. For a higher value, this estimated value is smoothed more significantly.		
<b>Dependency:</b>	Refer to: p1400, p1560, p1562		
<b>p1562[0...n]</b>	<b>Moment of inertia estimator change time load / J_est t load</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5.00 [ms]	5000.00 [ms]	10.00 [ms]
<b>Description:</b>	Sets the change time for the load torque/load force for the moment of inertia estimator. Lower values mean that faster changes are possible. For a higher value, this estimated value is smoothed more significantly.		
<b>Dependency:</b>	Refer to: p1400, p1560, p1561		
<b>p1563[0...n]</b>	<b>CO: Mom. of inertia estimator load torque direction of rotation pos. / J_est M pos</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36 [Nm]	340.28235E36 [Nm]	0.00 [Nm]
<b>Description:</b>	Display and connector output for the monitored load torque in the positive direction of rotation. The moment of inertia estimator estimates the load torque drawn while the speed is constant.		
<b>Dependency:</b>	Refer to: p1400, p1560, p1561		
<b>p1564[0...n]</b>	<b>CO: Mom. of inertia estimator load torque direction of rotation neg. / J_est M neg</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36 [Nm]	340.28235E36 [Nm]	0.00 [Nm]
<b>Description:</b>	Display and connector output for the monitored load torque in the negative direction of rotation. The moment of inertia estimator estimates the load torque drawn while the speed is constant.		
<b>Dependency:</b>	Refer to: p1400, p1560, p1561		
<b>p1570[0...n]</b>	<b>CO: Flux setpoint / Flex setp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6722
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	50.0 [%]	200.0 [%]	100.0 [%]
<b>Description:</b>	Sets the flux setpoint referred to rated motor flux.		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>Note:</b>	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.		



<b>p1573[0...n]</b>	<b>Flux threshold value magnetizing / Flux thresh magnet</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6722
	<b>Min</b> 10.0 [%]	<b>Max</b> 200.0 [%]	<b>Factory setting</b> 100.0 [%]
<b>Description:</b>	Sets the flux threshold value for enabling the speed setpoint and the end of magnetizing (r0056.4).		
<b>Note:</b>	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. This is generally the case when selecting fast magnetization (p1401 bit 6). The parameter has no influence for flying restart (see p1200) and after DC braking (see p1231).		
<b>p1574[0...n]</b>	<b>Voltage reserve dynamic / U_reserve dyn</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6723, 6724
	<b>Min</b> 0.0 [Vrms]	<b>Max</b> 150.0 [Vrms]	<b>Factory setting</b> 2.0 [Vrms]
<b>Description:</b>	Sets a dynamic voltage reserve.		
<b>Dependency:</b>	Refer to: p0500		
<b>Note:</b>	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).		
<b>p1574[0...n]</b>	<b>Voltage reserve dynamic / U_reserve dyn</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
PM250, PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6723, 6724
	<b>Min</b> 0.0 [Vrms]	<b>Max</b> 150.0 [Vrms]	<b>Factory setting</b> 10.0 [Vrms]
<b>Description:</b>	Sets a dynamic voltage reserve.		
<b>Dependency:</b>	Refer to: p0500		
<b>Note:</b>	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).		
<b>p1580[0...n]</b>	<b>Efficiency optimization / Efficiency opt.</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6722
	<b>Min</b> 0 [%]	<b>Max</b> 100 [%]	<b>Factory setting</b> 80 [%]
<b>Description:</b>	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.		
<b>Note:</b>	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.		

## 2 Parameters

### 2.2 List of parameters

<b>p1580[0...n]</b>	<b>Efficiency optimization / Efficiency opt.</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250, PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6722
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [%]	100 [%]	0 [%]
<b>Description:</b>	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.		
<b>Note:</b>	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.		
<b>p1582[0...n]</b>	<b>Flux setpoint smoothing time / Flux setp T_smth</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6722, 6724
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	4 [ms]	5000 [ms]	15 [ms]
<b>Description:</b>	Sets the smoothing time for the flux setpoint.		
<b>r1583</b>	<b>Flux setpoint smoothed / Flux setp smooth</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6722, 6723, 6724
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Displays the smoothed flux setpoint. The value is referred to the rated motor flux.		
<b>p1584[0...n]</b>	<b>Field weakening operation flux setpoint smoothing time / Field weak T_smth</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6722
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	20000 [ms]	0 [ms]
<b>Description:</b>	Sets the smoothing time for the flux setpoint in the field-weakening range		
<b>Recommend.:</b>	Smoothing should be especially used if there is no regenerative feedback into the line supply. This means that the DC link voltage can quickly increase in regenerative operation		
<b>Note:</b>	Only the flux setpoint rise is smoothed		
<b>p1586[0...n]</b>	<b>Field weakening characteristic scaling / Field weak scal</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	80.0 [%]	120.0 [%]	100.0 [%]
<b>Description:</b>	Sets the scaling of the pre-control characteristic for the start of field weakening. For values above 100 % and for partial load situations, the field weakening starts at higher speeds.		

**Note:** If the start of field weakening is shifted to lower speeds, then the voltage reserve is increased for partial load situations.  
If the start of field weakening is shifted to higher speeds, the voltage reserve is appropriately reduced so that for fast load changes, it can be expected that this will have a negative impact on the dynamic performance.


<b>r1589</b>	<b>Field-weakening current pre-control value / I_FieldWeak prectr</b>	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
		<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
		<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6724
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Displays the pre-control value for the field weakening current.			
<b>p1590[0...n]</b>	<b>Flux controller P gain / Flux controller Kp</b>	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
		<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		0.0	999999.0	10.0
<b>Description:</b>	Sets the proportional gain for the flux controller.			
<b>Note:</b>	The value is automatically pre-assigned dependent on the motor when the drive system is first commissioned. When calculating controller parameters (p0340 = 4), this value is re-calculated.			
<b>r1593[0...1]</b>	<b>CO: Field weakening controller / flux controller output / Field/FI_ctrl outp</b>	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
		<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
		<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6724
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Display and connector output for the output of the field weakening controller (synchronous motor).			
<b>Index:</b>	[0] = PI output [1] = I output			
<b>p1594[0...n]</b>	<b>Field-weakening controller P gain / Field_ctrl Kp</b>	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
		<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6724
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		0.00	1000.00	0.00
<b>Description:</b>	Sets the P gain of the field-weakening controller.			
<b>p1596[0...n]</b>	<b>Field weakening controller integral-action time / Field_ctrl Tn</b>	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
		<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723, 6724
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		10 [ms]	10000 [ms]	300 [ms]
<b>Description:</b>	Sets the integral-action time of the field-weakening controller.			

<b>r1597</b>	<b>CO: Field weakening controller output / Field_ctrl outp</b>	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
		<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		- [%]	- [%]	- [%]
<b>Description:</b>	Displays the output of the field weakening controller. The value is referred to the rated motor flux.			
<b>r1598</b>	<b>CO: Total flux setpoint / Flux setp total</b>	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
		<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6714, 6723, 6724, 6725, 6726, 8018
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		- [%]	- [%]	- [%]
<b>Description:</b>	Displays the effective flux setpoint. The value is referred to the rated motor flux.			
<b>p1610[0...n]</b>	<b>Torque setpoint static (sensorless) / M_set static</b>	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
		<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6700, 6721, 6722, 6726
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		-200.0 [%]	200.0 [%]	50.0 [%]
<b>Description:</b>	Sets the static torque setpoint for sensorless vector control. This parameter is entered as a percentage referred to the rated motor torque (r0333). For sensorless vector control, when the motor model is shut down, an absolute current is impressed. p1610 represents the maximum load that occurs at a constant setpoint speed.			
<b>Notice:</b>	p1610 should always be set to at least 10 % higher than the maximum steady-state load that can occur.			
<b>Note:</b>	For p1610 = 0%, a current setpoint is calculated that corresponds to the no-load case (ASM: rated magnetizing current). For p1610 = 100 %, a current setpoint is calculated that corresponds to the rated motor torque. Negative values are converted into positive setpoints in the case of induction and permanent-magnet synchronous motors.			
<b>p1611[0...n]</b>	<b>Additional acceleration torque (sensorless) / M_suppl_accel</b>	<b>Access level:</b> 2	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
		<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6700, 6721, 6722, 6726
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		0.0 [%]	200.0 [%]	30.0 [%]
<b>Description:</b>	Enters the dynamic torque setpoint for the low-speed range for sensorless vector control. This parameter is entered as a percentage referred to the rated motor torque (r0333).			
<b>Note:</b>	When accelerating and braking p1611 is added to p1610 and the resulting total torque is converted into an appropriate current setpoint and controlled. For pure accelerating torques, it is always favorable to use the torque pre-control of the speed controller (p1496).			

<b>r1614</b>	<b>EMF maximum / EMF max</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6725
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Displays the actual maximum possible electromotive force (EMF) of the separately-excited synchronous motor.		
<b>Dependency:</b>	The value is the basis for the flux setpoint. The maximum possible EMF depends on the following factors: - Actual DC link voltage (r0070). - Maximum modulation depth (p1803). - Field-generating and torque-generating current setpoint.		
<b>p1616[0...n]</b>	<b>Current setpoint smoothing time / I_set T_smooth</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6721, 6722
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	4 [ms]	10000 [ms]	40 [ms]
<b>Description:</b>	Sets the smoothing time for the current setpoint. The current setpoint is generated from p1610 and p1611.		
<b>Note:</b>	This parameter is only effective in the range where current is injected for sensorless vector control.		
<b>r1623[0...1]</b>	<b>Field-generating current setpoint (steady-state) / Id_set stationary</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6723
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Displays the steady-state field generating current setpoint (Id_set).		
<b>Note:</b>	Re index 1: Reserved.		
<b>r1624</b>	<b>Field-generating current setpoint total / Id_setp total</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2002	<b>Dyn. index:</b> -
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6640, 6721, 6723, 6727
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Displays the limited field-generating current setpoint (Id_set). This value comprises the steady-state field-generating current setpoint r1623 and a dynamic component that is only set when changes are made to the flux setpoint.		
<b>p1654[0...n]</b>	<b>Curr. setpoint torque-gen. smoothing time field weakening range / Isq_s T_smth FW</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6710
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.1 [ms]	50.0 [ms]	4.8 [ms]
<b>Description:</b>	Sets the smoothing time constant for the setpoint of the torque-generating current components.		
<b>Note:</b>	The smoothing time does not become effective until the field-weakening range is reached.		

<b>p1702[0...n]</b>	<b>Isd current controller pre-control scaling / Isd_ctr_prectrScal</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6714
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	200.0 [%]	70.0 [%]
<b>Description:</b>	Sets the scaling of the dynamic current controller pre-control for the flux-generating current component Isd.		
<b>Note:</b>	The parameter is effective for permanent-magnet synchronous motors.		
<b>p1703[0...n]</b>	<b>Isq current controller pre-control scaling / Isq_ctr_prectrScal</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6714
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	200.0 [%]	60.0 [%]
<b>Description:</b>	Sets the scaling of the dynamic current controller pre-control for the torque/force-generating current component Isq.		
<b>p1715[0...n]</b>	<b>Current controller P gain / I_ctrl Kp</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6714
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000	100000.000	0.000
<b>Description:</b>	Sets the proportional gain of the current controller. This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.		
<b>p1717[0...n]</b>	<b>Current controller integral-action time / I_ctrl Tn</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 5714, 6700, 6714, 7017
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [ms]	1000.00 [ms]	2.00 [ms]
<b>Description:</b>	Sets the integral-action time of the current controller.		
<b>Dependency:</b>	Refer to: p1715		
<b>r1718</b>	<b>CO: Isq controller output / Isq_ctrl outp</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6714
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	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.		
<b>r1719</b>	<b>Isq controller integral component / Isq_ctrl I_comp</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6714
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Displays the integral component of the Isq current controller (torque/force-generating current, PI controller).		

<b>r1723</b>	<b>CO: Isd controller output / Isd_ctrl outp</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6714
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	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.		
<b>r1724</b>	<b>Isd controller integral component / Isd_ctrl I_comp</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6714
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Displays the integral component of the Isd current controller (flux-generating current, PI controller).		
<b>r1725</b>	<b>Isd controller integral component limit / Isd_ctrl I_limit</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6714
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Displays the limit value for the integral component of the Isd current controller.		
<b>p1726[0...n]</b>	<b>Quadrature arm decoupling scaling / Transv_decpl scal</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6714
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	200.0 [%]	75.0 [%]
<b>Description:</b>	Sets the scaling of the quadrature arm decoupling		
<b>Note:</b>	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.		
<b>p1727[0...n]</b>	<b>Quadrature arm decoupling at voltage limit scaling / TrnsvDecplVmaxScal</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6714
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [%]	200.0 [%]	50.0 [%]
<b>Description:</b>	Sets the scaling of quadrature arm decoupling when the voltage limit is reached.		
<b>r1728</b>	<b>De-coupling voltage in-line axis / U_dir-axis_decoupl</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Displays the actual output of the quadrature channel de-coupling for the d axis.		

<b>r1729</b>	<b>De-coupling voltage quadrature axis / U_quad_decoupl</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Displays the actual output of the quadrature channel de-coupling for the q axis.		
<b>p1730[0...n]</b>	<b>Isd controller integral component shutdown threshold / Isd ctrl Tn shutd</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	30 [%]	150 [%]	30 [%]
<b>Description:</b>	Sets the speed threshold for deactivating the integral component of the Isd controller. The d current controller is only effective as P controller for speeds greater than the threshold value. Instead of the integral component, the quadrature arm decoupling is effective.		
<b>Warning:</b>	For settings above 80%, the d current controller is active up to the field weakening limit. When operated at the voltage limit, this can result in an unstable behavior. In order to avoid this, the dynamic voltage reserve p1574 should be increased.		
			
<b>Note:</b>	The parameter value is referred to the synchronous rated motor speed.		
<b>p1731[0...n]</b>	<b>Isd controller combination current time component / Isd ctr I_combi T1</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [ms]	10000.00 [ms]	0.00 [ms]
<b>Description:</b>	Sets the time constant to calculate the d current DC component difference (combination current) to add to the d current controller actual value.		
<b>Note:</b>	It is not added for p1731 = 0.		
<b>r1732[0...1]</b>	<b>CO: Direct-axis voltage setpoint / Direct U set</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 5700, 5714, 6714, 5718
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Display and connector output for the direct axis voltage setpoint Ud.		
<b>Index:</b>	[0] = Unsmoothed [1] = Smoothed with p0045		
<b>r1733[0...1]</b>	<b>CO: Quadrature-axis voltage setpoint / Quad U set</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -
	<b>Units group:</b> 5_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 5700, 5714, 5718, 6714, 6719
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Display and connector output for the quadrature axis voltage setpoint Uq.		
<b>Index:</b>	[0] = Unsmoothed [1] = Smoothed with p0045		



<b>p1740[0...n]</b>	<b>Gain resonance damping for encoderless closed-loop control / Gain res_damp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> 0.000	<b>Max</b> 10.000	<b>Factory setting</b> 0.025
<b>Description:</b>	Defines the gain of the controller for resonance damping for operation with sensorless vector control in the range that current is injected.		
<b>p1745[0...n]</b>	<b>Motor model error threshold stall detection / MotMod ThreshStall</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> 0.0 [%]	<b>Max</b> 1000.0 [%]	<b>Factory setting</b> 5.0 [%]
<b>Description:</b>	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.		
<b>Dependency:</b>	If a stalled drive is detected (r1408.12 = 1), fault F07902 is output after the delay time set in p2178.		
<b>Note:</b>	Refer to: p2178 Monitoring is only effective in the low-speed range (below p1755 * (100% - p1756)).		
<b>r1746</b>	<b>Motor model error signal stall detection / MotMod sig stall</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> - [%]	<b>Max</b> - [%]	<b>Factory setting</b> - [%]
<b>Description:</b>	Signal to initiate stall detection		
<b>Note:</b>	The signal is not calculated while magnetizing and only in the low speed range (below p1755 * (100 % - p1756)).		
<b>p1749[0...n]</b>	<b>Motor model increase changeover speed encoderless operation / Incr n_chng no enc</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> 0.0 [%]	<b>Max</b> 99.0 [%]	<b>Factory setting</b> 50.0 [%]
<b>Description:</b>	Minimum 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. The parameter value cannot be changed.		
<b>Dependency:</b>	Refer to: p1755, p1756		
<b>p1750[0...n]</b>	<b>Motor model configuration / MotMod config</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> -	<b>Max</b> -	<b>Factory setting</b> 0000 1100 bin
<b>Description:</b>	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).		

## 2 Parameters

### 2.2 List of parameters

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:	Bit	Signal name	1 signal	0 signal	FP
	00	Controlled start	Yes	No	-
	01	Controlled through 0 Hz	Yes	No	-
	02	Closed-loop ctrl oper. down to zero freq. for passive loads	Yes	No	-
	03	Motor model Lh_pre = f(PsiEst)	Yes	No	-
	06	Closed-loop/open-loop controlled (PEM) for blocked motor	Yes	No	-
	07	Use rugged changeover limits	Yes	No	-

**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.

The following applies for encoderless vector control of synchronous motors:

For a blocked motor (see p2175, p2177), the speed ramp-function generator is held in open-loop speed controlled operation, and a change is not made into closed-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  $\text{Min}(p1758, 0.5 * r0384)$ .

Activation can make sense for applications that demand a high torque at low frequencies and therefore low speed gradients.

Adequate parameterization must be ensured (p1610, p1611).

p1750[0...n]	Motor model configuration / MotMod config		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> Unsigned8
PM250, PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0000 0000 bin

**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:	Bit	Signal name	1 signal	0 signal	FP
	00	Controlled start	Yes	No	-
	01	Controlled through 0 Hz	Yes	No	-
	02	Closed-loop ctrl oper. down to zero freq. for passive loads	Yes	No	-
	03	Motor model Lh_pre = f(PsiEst)	Yes	No	-
	06	Closed-loop/open-loop controlled (PEM) for blocked motor	Yes	No	-
	07	Use rugged changeover limits	Yes	No	-

**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.

The following applies for encoderless vector control of synchronous motors:

For a blocked motor (see p2175, p2177), the speed ramp-function generator is held in open-loop speed controlled operation, and a change is not made into closed-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  $\text{Min}(p1758, 0.5 * r0384)$ .

Activation can make sense for applications that demand a high torque at low frequencies and therefore low speed gradients.

Adequate parameterization must be ensured (p1610, p1611).

**r1751**

### Motor model status / MotMod status

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:**

Displays the status of the motor model.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Controlled operation	Active	Inactive	6721
	01	Set ramp-function generator	Active	Inactive	-
	02	Stop RsLh adaptation	Yes	No	-
	03	Feedback	Active	Inactive	-
	05	Holding angle	Yes	No	-
	06	Acceleration criterion	Active	Inactive	-
	07	Set angular integrator PEM	Yes	No	-
	08	Stop Kt adaptation PEM	Yes	No	-
	09	PolID active PEM sensorless	Yes	No	-
	10	I injection PEM	Yes	No	-

## 2 Parameters

### 2.2 List of parameters

11	Speed controller output cannot be set to zero	Yes	No	-
12	Rs adapt waits	Yes	No	-
13	Motor operation	Yes	No	-
14	Stator frequency sign	Positive	Negative	-
15	Torque sign	Motor mode	Regenerative mode	-
16	Pulse injection active PEM	Yes	No	-
17	Operation with rugged model feedback	Enabled	Inhibited	-
18	Operation of the current model with current feedback	Enabled	Inhibited	-
19	Current feedback in the current model	Active	Inactive	-
20	Rugged increase of the changeover limits	Active	Inactive	-
21	Motor blocked (RFG stop) PEM	No	Yes	-

**Note:**

Re bit 17:

Displays the status when enabling the rugged model feedback (p1784) for operation with and without encoder. The feedback is used to increase the parameter ruggedness of the motor model and is effective in the operating range of the two-component closed loop current control.

Re bit 18:

Displays the status when enabling the differential current feedback in the current model for operation with encoder. The function is automatically enabled with  $p1784 > 0$  or  $p1731 > 0$ . The feedback is used for a rugged change between the current model and complete machine model with active rugged model feedback and combination current.

Re bit 19:

Displays the currently active stator circuit feedback in current model operation.

Re bit 20:

Displays the currently effective increase of the changeover limits by the value  $p1749 * p1755$ .

Re bit 21:

For a blocked synchronous motor, the speed ramp-function generator is held in the open-loop speed controlled operating range if the torque setpoint reaches the torque limit and the speed is less than the threshold value in p2175.

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#### p1755[0...n] Motor model changeover speed encoderless operation / MotMod n\_chgSnsorl

<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

**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 sensorless steady-state operation. If the stability is not adequate close to the changeover speed, it may make sense to increase the parameter value. On the other hand, very low changeover speeds can negatively impact the stability.

**Note:**

The changeover speed applies for the changeover between open-loop and closed-loop control mode.

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#### p1756 Motor model changeover speed hysteresis encoderless operation / MotMod n\_chgov hys

<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6730, 6731
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.0 [%]	95.0 [%]	50.0 [%]

**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. Extremely small hystereses can have a negative impact on the stability in the changeover speed range, and very high hystereses in the standstill range.

<b>p1758[0...n]</b>	<b>Motor model changeover delay time closed/open-loop control / MotMod t cl_op</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	100 [ms]	10000 [ms]	500 [ms]
<b>Description:</b>	Sets the minimum time for falling below the changeover speed when changing from closed-loop controlled operation to open-loop controlled operation.		
<b>Dependency:</b>	The wait time has no significance if the setpoint speed before the ramp-function generator lies in the open-loop speed controlled operating range. In this case, the change is made without any delay. Refer to: p1755, p1756		
<b>Note:</b>	If p1758 is changed, commissioning must be selected in order to validate the value for the blocking monitoring.		
<b>p1759[0...n]</b>	<b>Motor model changeover delay time open/closed-loop control / MotMod t op_cl</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	2000 [ms]	0 [ms]
<b>Description:</b>	Sets the minimum time for a transition from open-loop controlled to closed-loop controlled operation after the lower changeover speed $p1755 * (1 - p1756 / 100 \%)$ has been exceeded.		
<b>Dependency:</b>	Refer to: p1755, p1756		
<b>Note:</b>	With p1759 = 2000 ms, the delay time becomes ineffective and the model changeover is determined by the output frequency only (changeover for p1755).		
<b>r1762[0...1]</b>	<b>Motor model deviation component 1 / MotMod dev comp 1</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6721, 6730, 6731
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Induction motor (ASM): Displays the referred imaginary system deviation for the adaptation circuit of the motor model. Permanent magnet synchronous motor (PEM): Displays the system deviation for speed adaptation. r1762[0]: Angular deviation [rad-el] of the estimated EMF. r1762[1]: Angular deviation [rad-el] of the low-level signal response for pulse technique.		
<b>Index:</b>	[0] = Deviation model 1 [1] = Deviation model 2		
<b>r1763</b>	<b>Motor model deviation component 2 / MotMod dev comp 2</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Induction motor (ASM): Displays the referred real system deviation for the adaptation circuit of the motor model. Permanent magnet synchronous motor (PEM): Not used.		

## 2 Parameters

### 2.2 List of parameters

<b>p1764[0...n]</b>	<b>Motor model without encoder speed adaptation Kp / MotMod woE n_adaKp</b>		
<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6730	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0.000	100000.000	1000.000	
<b>Description:</b>	Sets the proportional gain of the controller for speed adaptation without encoder.		
<b>r1765</b>	<b>Motor model speed adaptation Kp effective / MotM n_ada Kp act</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	
<b>Description:</b>	Displays the effective proportional gain of the controller for the speed adaptation.		
<b>p1767[0...n]</b>	<b>Motor model without encoder speed adaptation Tn / MotMod woE n_adaTn</b>		
<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6730	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
1 [ms]	200 [ms]	4 [ms]	
<b>Description:</b>	Sets the integral time of the controller for speed adaptation without encoder		
<b>r1768</b>	<b>Motor model speed adaptation Vi effective / MotM n_ada Vi act</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	
<b>Description:</b>	Displays the effective gain of the integral component of the controller for speed adaptation.		
<b>r1770</b>	<b>CO: Motor model speed adaptation proportional component / MotMod n_adapt Kp</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -	
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6730	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [rpm]	- [rpm]	- [rpm]	
<b>Description:</b>	Displays the P component of the controller for speed adaptation.		
<b>r1771</b>	<b>CO: Motor model speed adaptation I comp. / MotMod n_adapt Tn</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -	
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 6730	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [rpm]	- [rpm]	- [rpm]	
<b>Description:</b>	Displays the I component of the controller for speed adaptation.		

<b>r1773[0...1]</b>	<b>Motor model slip speed / MotMod slip</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	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.		
<b>Index:</b>	[0] = Slip speed estimated [1] = Speed estimated		
<b>p1774[0...n]</b>	<b>Motor model offset voltage compensation alpha / MotMod offs comp A</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-5.000 [V]	5.000 [V]	0.000 [V]
<b>Description:</b>	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.		
<b>Note:</b>	The value is pre-set during the rotating measurement.		
<b>p1775[0...n]</b>	<b>Motor model offset voltage compensation beta / MotMod offs comp B</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-5.000 [V]	5.000 [V]	0.000 [V]
<b>Description:</b>	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.		
<b>Note:</b>	The value is pre-set during the rotating measurement.		
<b>r1776[0...6]</b>	<b>Motor model status signals / MotMod status sig</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	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)		
<b>Index:</b>	[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		

<b>r1778</b>	<b>Motor model flux angle difference / MotMod ang diff</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2005	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [°]	- [°]	- [°]
<b>Description:</b>	Displays the difference between the motor model flux angle and the transformation angle.		
<b>Dependency:</b>	A setting for smoothing the display can be made using p1754.		

<b>p1780[0...n]</b>	<b>Motor model adaptation configuration / MotMod adapt conf</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0000 0000 0101 1100 bin

**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:	Bit	Signal name	1 signal	0 signal	FP
	01	Select motor model ASM Rs adaptation	Yes	No	-
	02	Select motor model ASM Lh adaptation	Yes	No	-
	03	Select motor model PEM kT adaptation	Yes	No	-
	04	Select motor model offset adaptation	Yes	No	-
	06	Select pole position identification PEM encoderless	Yes	No	-
	07	Select T(valve) with Rs adaptation	Yes	No	-
	10	Filter time combination current like current ctrl integral time	Yes	No	-
	12	Start PEM sensorless with last angle	Yes	No	-
	13	Fast pulsed pole position identification	Yes	No	-
	14	Delay of the precontrol speed to the motor model	Yes	No	-
	15	RESM: Linear Q flux model	active	not active	-

**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 deactivated and is instead taken into account in the motor model.  
 In order that the correction values of the Rs, Lh and kT adaptation (selected using Bit 0 ... Bit 2) are correctly accepted when changing over the drive data set, a dedicated motor number must be entered into p0826 for each different motor.  
 Re bit 12 (only for synchronous motors and bit 6 = 1):  
 The pole position identification is only carried out after power on and after the motor has coasted down. The switch-off speed p1226 should be as low as possible. If the power unit is switched off when the motor is stationary, then the next time that the power unit is switched on, the old angle is used. The precondition applies that while the power unit is switched off the motor does not rotate.  
 The duration of the pole position identification is shortened using bit 13. As a consequence, the pole wheel angle error can be slightly greater.



<b>p1784[0...n]</b>	<b>Motor model feedback scaling / MotMod fdbk scal</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> 0.0 [%]	<b>Max</b> 1000.0 [%]	<b>Factory setting</b> 0.0 [%]
<b>Description:</b>	Sets the scaling for model fault feedback.		
<b>Note:</b>	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.		
<b>p1785[0...n]</b>	<b>Motor model Lh adaptation Kp / MotMod Lh Kp</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> 0.000	<b>Max</b> 10.000	<b>Factory setting</b> 0.100
<b>Description:</b>	Sets the proportional gain for the Lh adaptation of the motor model for an induction motor (ASM).		
<b>p1786[0...n]</b>	<b>Motor model Lh adaptation integral time / MotMod Lh Tn</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> 10 [ms]	<b>Max</b> 10000 [ms]	<b>Factory setting</b> 100 [ms]
<b>Description:</b>	Sets the integral time for the Lh adaptation of the motor model for an induction motor (ASM).		
<b>r1787[0...n]</b>	<b>Motor model Lh adaptation corrective value / MotMod Lh corr</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> - [mH]	<b>Max</b> - [mH]	<b>Factory setting</b> - [mH]
<b>Description:</b>	Displays the corrective value for the Lh adaptation of the motor model for an induction motor (ASM).		
<b>Dependency:</b>	Refer to: p0826, p1780		
<b>Note:</b>	The adaptation result is reset if the magnetizing inductance of the induction motor is changed (p0360, r0382). This also happens when changing over the data set if a different motor is not being used (p0826). The display of the inactive data sets is only updated when changing over the data set.		
<b>r1791</b>	<b>Motor model Lh adaptation power-on frequency / MotMod Lh f_on</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> - [Hz]	<b>Max</b> - [Hz]	<b>Factory setting</b> - [Hz]
<b>Description:</b>	Displays the power-on stator frequency/ primary section frequency for the Lh adaptation for the induction motor (ASM).		

<b>r1792</b>	<b>Motor model Lh adaptation power-on slip / MotMod Lh fslip</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Hz]	- [Hz]	- [Hz]
<b>Description:</b>	Displays the power-on slip frequency for the Lh adaptation for the induction motor (ASM).		
<b>p1795[0...n]</b>	<b>Motor model kT adaptation integral time / MotMod kT Tn</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3,4	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6731
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10 [ms]	10000 [ms]	100 [ms]
<b>Description:</b>	Sets the integral time of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PEM).		
<b>r1797[0...n]</b>	<b>Motor model kT adaptation corrective value / MotMod kT corr</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6731
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Nm/A]	- [Nm/A]	- [Nm/A]
<b>Description:</b>	Displays the corrective value of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PEM).		
<b>Dependency:</b>	Refer to: p0826, p1780		
<b>Note:</b>	The display of the inactive data sets is only updated when changing over the data set.		
<b>p1800[0...n]</b>	<b>Pulse frequency setpoint / Pulse freq setp</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8014
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	2.000 [kHz]	16.000 [kHz]	4.000 [kHz]
<b>Description:</b>	Sets the pulse frequency for the converter. This parameter is pre-set to the rated converter value when the drive is first commissioned.		
<b>Dependency:</b>	Refer to: p0230		
<b>Note:</b>	The maximum and minimum possible pulse frequency is also determined by the power unit being used (minimum pulse frequency: 2 kHz or 4 kHz). 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).		

<b>r1801[0...1]</b>	<b>CO: Pulse frequency / Pulse frequency</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [kHz]	- [kHz]	- [kHz]
<b>Description:</b>	Display and connector output for the actual converter switching frequency.		
<b>Index:</b>	[0] = Actual [1] = Modulator minimum value		
<b>Note:</b>	The selected pulse frequency (p1800) may be reduced if the drive converter has an overload condition (p0290).		
<b>p1802[0...n]</b>	<b>Modulator mode / Modulator mode</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	19	10
<b>Description:</b>	Sets the modulator mode.		
<b>Value:</b>	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		
<b>Dependency:</b>	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 does not apply to power units PM260. p1802 = 10 can only be set for power units PM230 and PM240 and for r0204.15 = 0. Refer to: p0230, p0500		
<b>Note:</b>	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.		
<b>p1802[0...n]</b>	<b>Modulator mode / Modulator mode</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	10	0
<b>Description:</b>	Sets the modulator mode.		
<b>Value:</b>	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		
<b>Dependency:</b>	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 does not apply to power units PM260. p1802 = 10 can only be set for power units PM230 and PM240 and for r0204.15 = 0. Refer to: p0230, p0500		
<b>Note:</b>	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.		

## 2 Parameters

### 2.2 List of parameters

<b>p1802[0...n]</b>	<b>Modulator mode / Modulator mode</b>		
PM250	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> Integer16
PM260	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	4	4
<b>Description:</b>	Sets the modulator mode.		
<b>Value:</b>	0: Automatic changeover SVM/FLB 2: Space vector modulation (SVM) 3: SVM without overcontrol 4: SVM/FLB without overcontrol		
<b>Dependency:</b>	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 does not apply to power units PM260. Refer to: p0230, p0500		
<b>Note:</b>	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.		
<b>p1803[0...n]</b>	<b>Maximum modulation depth / Modulat depth max</b>		
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	20.0 [%]	120.0 [%]	115.0 [%]
<b>Description:</b>	Defines the maximum modulation depth.		
<b>Dependency:</b>	Refer to: p0500		
<b>Note:</b>	p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).		
<b>p1803[0...n]</b>	<b>Maximum modulation depth / Modulat depth max</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	20.0 [%]	150.0 [%]	106.0 [%]
<b>Description:</b>	Defines the maximum modulation depth.		
<b>Dependency:</b>	Refer to: p0500		
<b>Note:</b>	p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).		
<b>p1803[0...n]</b>	<b>Maximum modulation depth / Modulat depth max</b>		
PM250	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6723
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	20.0 [%]	150.0 [%]	106.0 [%]
<b>Description:</b>	Defines the maximum modulation depth.		
<b>Dependency:</b>	Default setting PM260: 103 %. Refer to: p0500		
<b>Note:</b>	p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).		

<b>p1806[0...n]</b>	<b>Filter time constant Vdc correction / T_filt Vdc_corr</b>				
PM230	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32		
PM250, PM260	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	0.0 [ms]	10000.0 [ms]	0.0 [ms]		
<b>Description:</b>	Sets the filter time constant of the DC link voltage used to calculate the modulation depth.				
<b>p1806[0...n]</b>	<b>Filter time constant Vdc correction / T_filt Vdc_corr</b>				
PM240	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	0.0 [ms]	10000.0 [ms]	0.0 [ms]		
<b>Description:</b>	Sets the filter time constant of the DC link voltage used to calculate the modulation depth.				
<b>r1808</b>	<b>DC link voltage actual value for U_max calculation / Vdc act val U_max</b>				
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32		
	<b>Can be changed:</b> -	<b>Scaling:</b> p2001	<b>Dyn. index:</b> -		
	<b>Units group:</b> 5_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	- [V]	- [V]	- [V]		
<b>Description:</b>	DC link voltage used to determine the maximum possible output voltage.				
<b>r1809</b>	<b>CO: Modulator mode actual / Modulator mode act</b>				
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Integer16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	1	9	-		
<b>Description:</b>	Displays the effective modulator mode.				
<b>Value:</b>	1: Flat top modulation (FLB) 2: Space vector modulation (SVM) 9: Optimized pulse pattern				
<b>p1810</b>	<b>Modulator configuration / Modulator config</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 bin		
<b>Description:</b>	Sets the configuration for the modulator.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Avg value filter for U_lim (only for Vdc_comp. in modulator)	Yes	No	-
	01	DC link voltage compensation in the current control	Yes	No	-
<b>Notice:</b>	Bit 1 = 1 can only be set under a pulse inhibit and for r0192.14 = 1.				
<b>Note:</b>	Re bit 00 = 0: Voltage limitation from the minimum of the DC link voltage (lower ripple in the output current, reduced output voltage).				

## 2 Parameters

### 2.2 List of parameters

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.

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<b>p1820[0...n]</b>	<b>Reverse the output phase sequence / Outp_ph_seq rev</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C(2), T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	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.		
<b>Value:</b>	0: OFF 1: ON		
<b>Note:</b>	This setting can only be changed when the pulses are inhibited.		

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<b>p1822</b>	<b>Power unit line phases monitoring tolerance time / PU ph monit t_tol</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	500 [ms]	540000 [ms]	1000 [ms]
<b>Description:</b>	Sets the tolerance time for line phase monitoring for blocksize power units. If a line phase fault is present for longer than this tolerance time, then a corresponding fault is output.		
<b>Notice:</b>	When operating with a failed line phase, depending on the active power, values higher than the default value can either immediately damage the power unit or damage it over the long term.		
<b>Note:</b>	For the setting p1822 = maximum value, line phase monitoring is deactivated.		

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<b>p1825</b>	<b>Converter valve threshold voltage / Threshold voltage</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [Vrms]	100.0 [Vrms]	0.6 [Vrms]
<b>Description:</b>	Sets the threshold voltage drop of the valves (power semiconductor devices) to be compensated.		
<b>Note:</b>	The value is automatically calculated in the motor data identification routine.		

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<b>p1828</b>	<b>Compensation valve lockout time phase U / Comp t_lock ph U</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [μs]	3.99 [μs]	0.00 [μs]
<b>Description:</b>	Sets the valve lockout time to compensate for phase U.		
<b>Note:</b>	The value is automatically calculated in the motor data identification routine.		

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<b>p1829</b>	<b>Compensation valve lockout time phase V / Comp t_lock ph V</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [µs]	3.99 [µs]	0.00 [µs]
<b>Description:</b>	Sets the valve lockout time to compensate for phase V.		

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<b>p1830</b>	<b>Compensation valve lockout time phase W / Comp t_lock ph W</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [µs]	3.99 [µs]	0.00 [µs]
<b>Description:</b>	Sets the valve lockout time to compensate for phase W.		

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<b>p1832</b>	<b>Dead time compensation current level / t_dead_comp I_lev</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [Arms]	10000.0 [Arms]	0.0 [Arms]
<b>Description:</b>	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.		
<b>Dependency:</b>	The factory setting of p1832 is automatically set to 0.02 * rated drive converter current (r0207).		

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<b>r1838.0...15</b>	<b>CO/BO: Gating unit status word 1 / Gating unit ZSW1</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays status word 1 of the power unit.		

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<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Fault time-critical	ON	OFF	-
	01	Gating unit mode bit 0	ON	OFF	-
	02	Pulse enable	ON	OFF	-
	03	Upper shutdown path	Inactive	Active	-
	04	Lower shutdown path	Inactive	Active	-
	05	Gating unit mode bit 1	ON	OFF	-
	06	Gating unit mode bit 2	ON	OFF	-
	07	Brake state	ON	OFF	-
	08	Brake diagnostics	ON	OFF	-
	09	Armature short-circuit braking	Active	Not active	-
	10	Gating unit state bit 0	ON	OFF	-
	11	Gating unit state bit 1	ON	OFF	-
	12	Gating unit state bit 2	ON	OFF	-
	13	Alarm status bit 0	ON	OFF	-
	14	Alarm status bit 1	ON	OFF	-
	15	Diagnostics 24 V	ON	OFF	-

<b>p1900</b>	<b>Motor data identification and rotating measurement / MotID and rot meas</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C(1), T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	3	0
<b>Description:</b>	<p>Sets the motor data identification and speed controller optimization.</p> <p>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; not for p1300 &lt; 20).</p> <p>p1900 = 0: Function inhibited.</p> <p>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.</p> <p>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.</p> <p>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.</p>		
<b>Value:</b>	<p>0: Inhibited</p> <p>1: Identifying motor data and optimizing speed control</p> <p>2: Identifying motor data (at standstill)</p> <p>3: Optimizing speed control (in the rotating mode)</p>		
<b>Dependency:</b>	Refer to: p1300, p1910, p1960		
<b>Notice:</b>	<p>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). During the rotating measurement it is not possible to save the parameter (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.</p>		
<b>Note:</b>	<p>The motor and control parameters of the vector control are only optimally set when both measurements are carried out (initially at standstill, and then with the motor rotating). The measurement with rotating motor is not performed for p1300 &lt; 20 (U/f controls). 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.</p>		



<b>p1901</b>		<b>Test pulse evaluation configuration / Test puls config</b>			
<b>Access level:</b>	3	<b>Calculated:</b>	p0340 = 1	<b>Data type:</b> Unsigned32	
<b>Can be changed:</b>	T	<b>Scaling:</b>	-	<b>Dyn. index:</b> -	
<b>Units group:</b>	-	<b>Unit selection:</b>	-	<b>Func. diagram:</b> -	
<b>Min</b>	-	<b>Max</b>	-	<b>Factory setting</b>	
				0000 bin	
<b>Description:</b>	Sets the configuration for the test pulse evaluation. Bit 00: Check for conductor-to-conductor short circuit once/always when the pulses are enabled. Bit 01: Check for ground fault once/always when the pulses are enabled. Bit 02: Activation of the tests selected using bit 00 and/or bit 01 each time the pulses are enabled				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Phase short-circuit test pulse active	Yes	No	-
	01	Ground fault detection test pulse active	Yes	No	-
	02	Test pulse at each pulse enable	Yes	No	-
<b>Dependency:</b>	Refer to: p0287				
<b>Note:</b>	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. 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.				

<b>r1902</b>		<b>Test pulse evaluation status / Test puls ev stat</b>			
<b>Access level:</b>	4	<b>Calculated:</b>	-	<b>Data type:</b> Unsigned32	
<b>Can be changed:</b>	-	<b>Scaling:</b>	-	<b>Dyn. index:</b> -	
<b>Units group:</b>	-	<b>Unit selection:</b>	-	<b>Func. diagram:</b> -	
<b>Min</b>	-	<b>Max</b>	-	<b>Factory setting</b>	
				-	
<b>Description:</b>	Displays the status of the test pulse evaluation.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Short-circuit test successfully performed	Yes	No	-
	01	Phase short-circuit detected	Yes	No	-
	02	Ground fault test successfully performed	Yes	No	-
	03	Ground fault detected	Yes	No	-
	04	Identification pulse width greater than the minimum pulse width	Yes	No	-
<b>Note:</b>	If the ground fault test was selected, but not successfully performed, then sufficient current will not be able to be established during the test pulses. Re bit 04: A test pulse longer than one sampling time has occurred				

<b>p1909[0...n]</b>		<b>Motor data identification control word / MotID STW</b>			
<b>Access level:</b>	3	<b>Calculated:</b>	p0340 = 1	<b>Data type:</b> Unsigned32	
<b>Can be changed:</b>	T	<b>Scaling:</b>	-	<b>Dyn. index:</b> MDS	
<b>Units group:</b>	-	<b>Unit selection:</b>	-	<b>Func. diagram:</b> -	
<b>Min</b>	-	<b>Max</b>	-	<b>Factory setting</b>	
				0000 0000 0000 0000 0000 0000 0000 0000 0000 bin	
<b>Description:</b>	Sets the configuration for the motor data identification.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Stator inductance estimate no measurement	Yes	No	-
	02	Rotor time constant estimate no measurement	Yes	No	-

## 2 Parameters

### 2.2 List of parameters

03	Leakage inductance estimate no measurement	Yes	No	-
05	Determine Tr and Lsig evaluation in the time range	Yes	No	-
06	Activate vibration damping	Yes	No	-
07	De-activate vibration detection	Yes	No	-
11	De-activate pulse measurement Lq Ld	Yes	No	-
12	De-activate rotor resistance Rr measurement	Yes	No	-
14	De-activate valve interlocking time measurement	Yes	No	-
15	Determine only stator resistance, valve voltage fault, dead time	Yes	No	-
16	Short motor identification (lower quality)	Yes	No	-
17	Measurement without control parameter calculation	Yes	No	-
18	After motID direct transition into operation	Yes	No	-
19	After MotID automatically save results	Yes	No	-
20	Estimate cable resistance	Yes	No	-

**Note:**

The following applies to permanent-magnet synchronous motors:

Without de-selection in bit 11, in the closed-loop control mode, the direct inductance LD and the quadrature inductance Lq are measured at a low current.

When de-selecting with bit 11 or in the U/f mode, the stator inductance is measured at half the rated motor current.

If the stator inductance is not measured but is to be estimated, then bit 0 should be set and bit 11 should be de-selected.

Bit 19 = 1:

All parameters are automatically saved after a successful motor data identification.

If a speed controller optimization run is then selected, the parameters are only saved after this measurement has been completed.

#### p1910

#### Motor data identification selection / MotID selection

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	28	0

**Description:**

Sets the motor data identification routine.

The motor data identification routine is carried out after the next power-on command.

p1910 = 1:

All motor data and the drive converter characteristics are identified and then transferred to the following parameters:

p0350, p0354, p0356, p0357, p0358, p0360, p1825, p1828, p1829, p1830

After this, the control parameter p0340 = 3 is automatically calculated.

p1910 = 20:

Only for internal SIEMENS use.

**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
- 24: Rectangular voltage vector input with filter
- 25: Triangular voltage vector input with filter
- 26: Enter voltage vector with DTC correction
- 27: Enter voltage vector with AVC
- 28: Enter voltage vector with DTC + AVC 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

- Notice:** 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.
- Note:** 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).  
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.
  3. For settings 27 and 28, the AVC configuration set using p1840 is active.  
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 mainly influenced by the motor size. At the end of the motor data identification, p1910 is automatically set to 0, if only the stationary measurement is selected, then p1900 is also reset to 0, otherwise, the rotating measurement is activated.


<b>p1911</b>	<b>Phases to be identified number / Ph to ident qty</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	3	1
<b>Description:</b>	Sets the number of phases to be identified.		
<b>Value:</b>	1: 1 phase U 2: 2 phases U, V 3: 3 phases U, V, W		
<b>Note:</b>	When identifying with several phases, the accuracy increases and also the time it takes to make the measurement.		
<b>r1912[0...2]</b>	<b>Identified stator resistance / R_stator ident</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ohm]	- [ohm]	- [ohm]
<b>Description:</b>	Displays the identified stator resistance.		
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W		
<b>r1913[0...2]</b>	<b>Identified rotor time constant / T_rotor ident</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ms]	- [ms]	- [ms]
<b>Description:</b>	Displays the identified rotor time constant.		
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W		

<b>r1914[0...2]</b>	<b>Identified total leakage inductance / L_total_leak ident</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [mH]	- [mH]	- [mH]
<b>Description:</b>	Displays the identified total leakage inductance.		
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W		
<b>r1915[0...2]</b>	<b>Identified nominal stator inductance / L_stator ident</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [mH]	- [mH]	- [mH]
<b>Description:</b>	Displays the nominal stator inductance identified.		
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W		
<b>r1916[0...2]</b>	<b>Identified stator inductance 1 / L_stator 1 ident</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [mH]	- [mH]	- [mH]
<b>Description:</b>	Displays the nominal stator inductance identified for the 1st point of the saturation characteristic.		
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W		
<b>r1917[0...2]</b>	<b>Identified stator inductance 2 / L_stator 2 ident</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [mH]	- [mH]	- [mH]
<b>Description:</b>	Displays the nominal stator inductance identified for the 2nd point of the saturation characteristic.		
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W		
<b>r1918[0...2]</b>	<b>Identified stator inductance 3 / L_stator 3 ident</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [mH]	- [mH]	- [mH]
<b>Description:</b>	Displays the nominal stator inductance identified for the 3rd point of the saturation characteristic.		
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W		

<b>r1919[0...2]</b>	<b>Identified stator inductance 4 / L_stator 4 ident</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [mH]	- [mH]	- [mH]
<b>Description:</b>	Displays the nominal stator inductance identified for the 4th point of the saturation characteristic.		
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W		
<b>r1925[0...2]</b>	<b>Identified threshold voltage / U_threshold ident</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Vrms]	- [Vrms]	- [Vrms]
<b>Description:</b>	Displays the identified IGBT threshold voltage.		
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W		
<b>r1926[0...2]</b>	<b>Identified effective valve lockout time / t_lock_valve id</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [µs]	- [µs]	- [µs]
<b>Description:</b>	Displays the identified effective valve lockout time.		
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W		
<b>r1927[0...2]</b>	<b>Identified rotor resistance / R_rotor ident</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ohm]	- [ohm]	- [ohm]
<b>Description:</b>	Displays identified rotor resistance (on separately excited synchronous motors: damping resistance).		
<b>Index:</b>	[0] = Phase U [1] = Phase V [2] = Phase W		

p1959[0...n]	Rotating measurement configuration / Rot meas config				
PM230	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> Unsigned16		
PM240	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 0000 0001 1110 bin		
<b>Description:</b>	Sets the configuration of the rotating measurement. Re bit 12 = 1: The selection only has an effect on the measurement p1960 = 1, 2. For the shortened measurement, the magnetizing current and moment of inertia are determined with a somewhat lower accuracy, the oscillation test is completely eliminated. Re bit 13 = 1: After the measurement has been completed, the system immediately goes into closed-loop speed controlled operation.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	01	Saturation characteristic identification	Yes	No	-
	02	Moment of inertia identification	Yes	No	-
	03	Re-calculates the speed controller parameters	Yes	No	-
	04	Speed controller optimization (vibration test)	Yes	No	-
	12	Measurement shortened	Yes	No	-
	13	After measurement direct transition into operation	Yes	No	-
<b>Note:</b>	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 = 1, 3: p1400.0, p1458, p1459, p1470, p1472, p1496				

p1959[0...n]	Rotating measurement configuration / Rot meas config				
PM250	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> Unsigned16		
PM260	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0001 1110 bin		
<b>Description:</b>	Sets the configuration of the rotating measurement.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	01	Saturation characteristic identification	Yes	No	-
	02	Moment of inertia identification	Yes	No	-
	03	Re-calculates the speed controller parameters	Yes	No	-
	04	Speed controller optimization (vibration test)	Yes	No	-
<b>Note:</b>	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 = 1, 3: p1400.0, p1458, p1459, p1470, p1472, p1496				

<b>p1960</b>	<b>Rotating measurement selection / Rot meas sel</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	3	0
<b>Description:</b>	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.		
<b>Value:</b>	0: Inhibited 1: Rotating measurement in encoderless operation 3: Speed controller optimization in encoderless operation		
<b>Dependency:</b>	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, p1967, r1968		
<b>Danger:</b>	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.		
			
<b>Notice:</b>	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). During the rotating measurement it is not possible to save the parameter (p0971).		
<b>Note:</b>	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.		
<b>p1961</b>	<b>Saturation characteristic speed to determine / Sat_char n determ</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	26 [%]	75 [%]	40 [%]
<b>Description:</b>	Sets the speed to determine the saturation characteristic. The percentage value is referred to p0310 (rated motor frequency).		
<b>Dependency:</b>	Refer to: p0310, p1959		
<b>Note:</b>	The saturation characteristics should be determined at an operating point with the lowest possible load.		
<b>p1965</b>	<b>Speed_ctrl_opt speed / n_opt speed</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10 [%]	75 [%]	40 [%]
<b>Description:</b>	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).		
<b>Dependency:</b>	Refer to: p0310, p1959		

## 2 Parameters

### 2.2 List of parameters

**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 p1959.5) 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

<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
1 [%]	400 [%]	100 [%]

**Description:** Sets the dynamic response factor for speed controller optimization.  
After optimization, the dynamic response achieved is displayed in r1968.

**Dependency:** Refer to: p1959, r1968

**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).  
If the actual dynamic response (see r1968) is significantly reduced with respect to the required dynamic response (p1967), then this can be as a result of mechanical load oscillations. If, in spite of this load behavior, a higher dynamic response is required, then the oscillation test (p1959.4 = 0) should be deactivated and the measurement repeated.

**r1968**

#### Speed\_ctrl\_opt dynamic factor actual / n\_opt dyn\_fact act

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [%]	- [%]	- [%]

**Description:** Displays the dynamic factor which is actually achieved for the vibration test

**Dependency:** Refer to: p1959, p1967

**Note:** This dynamic factor only refers to the control mode of the speed controller set in p1960.

**r1969**

#### Speed\_ctrl\_opt moment of inertia determined / n\_opt M\_inert det

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> 25_1	<b>Unit selection:</b> p0100	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [kgm <sup>2</sup> ]	- [kgm <sup>2</sup> ]	- [kgm <sup>2</sup> ]

**Description:** Displays the determined moment of inertia of the drive.  
After it has been determined, the value is transferred to p0341, p0342.

**Dependency:** IEC drives (p0100 = 0): unit kg m<sup>2</sup>  
NEMA drives (p0100 = 1): unit lb ft<sup>2</sup>  
Refer to: p0341, p0342, p1959

**r1970[0...1]**

#### Speed\_ctrl\_opt vibration test vibration frequency determined / n\_opt f\_vib det

<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [Hz]	- [Hz]	- [Hz]


**Description:** Displays the vibration frequencies determined by the vibration test.

**Index:** [0] = Frequency low  
[1] = Frequency high

**Dependency:** Refer to: p1959



<b>p1974</b>	<b>Speed_ctrl_opt saturation characteristic rotor flux maximum / n_opt rot_fl max</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	104 [%]	120 [%]	120 [%]
<b>Description:</b>	Sets the maximum flux setpoint to measure the saturation characteristic.		
<b>p1980[0...n]</b>	<b>PolID technique / PolID technique</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	10	4
<b>Description:</b>	Sets the pole position identification technique. p1980 = 1, 8: The current magnitude is set using p0329. p1980 = 4, 6: The current magnitude of the first measurement section is set using p0325, the second using p0329. p1980 = 10: The rated motor current is impressed to align. The current magnitudes are limited to the rated power unit values.		
<b>Value:</b>	1: Voltage pulsing 1st harmonics 4: Voltage pulsing 2-stage 6: Voltage pulsing 2-stage inverse 8: Voltage pulsing 2nd harmonic, inverse 10: DC current injection		
<b>Dependency:</b>	When commissioning a catalog motor, the technique is automatically selected depending on the motor type being used. Refer to: p0325, p0329, p1780		
<b>Note:</b>	Voltage pulse technique (p1980 = 1, 4) cannot be applied to operation with sine-wave output filters (p0230).		
<b>r1984</b>	<b>PolID angular difference / PolID ang diff</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [°]	- [°]	- [°]
<b>Description:</b>	Displays the angular difference between the actual electrical commutation angle and the angle determined by the pole position identification.		
<b>Dependency:</b>	Refer to: p0325, p0329, p1980, r1985, r1987		
<b>Note:</b>	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.		
<b>r1985</b>	<b>PolID saturation curve / PolID sat_char</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [Arms]	- [Arms]	- [Arms]
<b>Description:</b>	Displays the saturation characteristic of the pole position identification routine (saturation technique). Displays the current characteristic of the pole position identification routine (elasticity technique).		
<b>Dependency:</b>	Refer to: p0325, p0329, p1980, r1984, r1987		
<b>Note:</b>	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).		

<b>r1987</b>	<b>PoIID trigger characteristic / PoIID trig_char</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	<p>Displays the trigger characteristic of the pole position identification routine.</p> <p>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).</p> <p>The values for trigger characteristic and saturation characteristic are always output in synchronism from a time perspective.</p>		
<b>Dependency:</b>	Refer to: p0325, p0329, p1980, r1984, r1985		
<b>Note:</b>	<p>PoIID: Pole position identification</p> <p>The following information and data can be taken from the trigger characteristic.</p> <ul style="list-style-type: none"> <li>- the value -100% marks the angle at the start of the measurement.</li> <li>- the value +100 % marks the commutation angle determined from the pole position identification routine.</li> </ul>		
<b>p1999[0...n]</b>	<b>Ang. commutation offset calibr. and PoIID scaling / Com_ang_offs scal</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS, p0130
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10 [%]	5000 [%]	100 [%]
<b>Description:</b>	Sets the scaling for the runtime of the pole position identification technique in which the current is injected.		
<b>Dependency:</b>	Refer to: p0341, p0342		
<b>Caution:</b>	For p1999 > 100 % (setting large moments of inertia) the following applies:		
	There is no locked rotor monitoring (F07970 fault value 2).		
<b>Note:</b>	For high moments of inertia, it is practical to scale the runtime of the calibration higher.		
<b>p2000</b>	<b>Reference speed reference frequency / n_ref f_ref</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	6.00 [rpm]	210000.00 [rpm]	1500.00 [rpm]
<b>Description:</b>	<p>Sets the reference quantity for speed and frequency.</p> <p>All speeds or frequencies specified as relative value are referred to this reference quantity.</p> <p>The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).</p> <p>The following applies: Reference frequency (in Hz) = reference speed (in ((rpm) / 60) x pole pair number)</p>		
<b>Dependency:</b>	<p>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.</p> <p>Refer to: p2001, p2002, p2003, r2004, r3996</p>		
<b>Notice:</b>	When the reference speed / reference frequency is changed, short-term communication interruptions may occur.		
<b>Note:</b>	<p>If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.</p> <p>Example 1:</p> <p>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).</p> <p>Example 2:</p> <p>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).</p>		

p2001	Reference voltage / Reference voltage		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10 [Vrms]	100000 [Vrms]	1000 [Vrms]
<b>Description:</b>	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.		
<b>Dependency:</b>	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		
<b>Notice:</b>	When the reference voltage is changed, short-term communication interruptions may occur.		
<b>Note:</b>	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.		
p2002	Reference current / I_ref		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.10 [Arms]	100000.00 [Arms]	100.00 [Arms]
<b>Description:</b>	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).		
<b>Dependency:</b>	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		
<b>Notice:</b>	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.		
<b>Note:</b>	Preassigned value is p0640. 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.		

## 2 Parameters

### 2.2 List of parameters

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.

---

<b>p2003</b>	<b>Reference torque / M_ref</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> 7_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.01 [Nm]	20000000.00 [Nm]	1.00 [Nm]
<b>Description:</b>	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).		
<b>Dependency:</b>	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		
<b>Notice:</b>	When the reference torque is changed, short-term communication interruptions may occur.		
<b>Note:</b>	Preassigned value is 2 * p0333. If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor. Example: The actual value of the total torque (r0079) is connected to a test socket (e.g. p0771[0]). The actual torque is cyclically converted into a percentage of the reference torque (p2003) and output according to the parameterized scaling.		

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<b>r2004</b>	<b>Reference power / P_ref</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> 14_10	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [kW]	- [kW]	- [kW]
<b>Description:</b>	Displays the reference quantity for power. All power ratings specified as relative value are referred to this reference quantity. The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).		
<b>Dependency:</b>	This value is calculated as follows: Infeed: Calculated from voltage times current. Closed-loop control: Calculated from torque times speed. Refer to: p2000, p2001, p2002, p2003		
<b>Note:</b>	If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor. The reference power is calculated as follows: - 2 * Pi * reference speed / 60 * reference torque (motor) - reference voltage * reference current * root(3) (infeed)		

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<b>p2005</b>	<b>Reference angle / Reference angle</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	90.00 [°]	180.00 [°]	90.00 [°]
<b>Description:</b>	Sets the reference quantity for angle. All angles specified as relative value are referred to this reference quantity. The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).		

**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.

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<b>p2006</b>	<b>Reference temp / Ref temp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	50.00 [°C]	300.00 [°C]	100.00 [°C]

**Description:** Sets the reference quantity for temperature.  
All temperatures specified as relative value are referred to this reference quantity.  
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

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<b>p2007</b>	<b>Reference acceleration / a_ref</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.01 [rev/s <sup>2</sup> ]	500000.00 [rev/s <sup>2</sup> ]	0.01 [rev/s <sup>2</sup> ]

**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:  
 $p2007 = p2000 / 1 [s]$

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<b>p2010</b>	<b>Comm IF baud rate / Comm baud</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	6	12	12

**Description:** Sets the baud rate for the commissioning interface (USS, RS232).

**Value:**

6:	9600 baud
7:	19200 baud
8:	38400 baud
9:	57600 baud
10:	76800 baud
11:	93750 baud
12:	115200 baud

**Note:** COMM-IF: Commissioning interface  
The parameter is not influenced by setting the factory setting.

---

## 2 Parameters

### 2.2 List of parameters

<b>p2011</b>	<b>Comm IF address / Comm add</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	31	2
<b>Description:</b>	Sets the address for the commissioning interface (USS, RS232).		
<b>Note:</b>	The parameter is not influenced by setting the factory setting.		
<b>p2016[0...3]</b>	<b>CI: Comm IF USS PZD send word / Comm USS send word</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> 4000H	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Selects the PZD (actual values) to be sent via the commissioning interface USS. The actual values are displayed on an intelligent operator panel (IOP).		
<b>Index:</b>	[0] = PZD 1 [1] = PZD 2 [2] = PZD 3 [3] = PZD 4		
<b>r2019[0...7]</b>	<b>Comm IF error statistics / Comm err</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the receive errors at the commissioning interface (USS, RS232).		
<b>Index:</b>	[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		
<b>p2020</b>	<b>Field bus interface baud rate / Field bus baud</b>		
CU240B-2	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	4	13	8
<b>Description:</b>	Sets the baud rate for the field bus interface (RS485).		
<b>Value:</b>	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

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<b>p2021</b>	<b>Field bus interface address / Field bus address</b>		
CU240B-2	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	247	0

**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 that 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

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<b>p2022</b>	<b>Field bus int USS PZD no. / Field bus USS PZD</b>		
CU240B-2	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	8	2

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

**Dependency:** Refer to: p2030

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

## 2 Parameters

### 2.2 List of parameters

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<b>p2023</b>	<b>Field bus int USS PKW no. / Field bus USS PKW</b>		
CU240B-2	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	127	127
<b>Description:</b>	Sets the number of 16-bit words in the PKW part of the USS telegram for the field bus interface.		
<b>Value:</b>	0: PKW 0 words 3: PKW 3 words 4: PKW 4 words 127: PKW variable		
<b>Dependency:</b>	Refer to: p2030		
<b>Note:</b>	The parameter is not influenced by setting the factory setting.		

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<b>p2024[0...2]</b>	<b>Fieldbus interface times / Fieldbus times</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	10000 [ms]	[0] 1000 [ms] [1] 0 [ms] [2] 0 [ms]
<b>Description:</b>	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]: Not relevant. p2024[2]: Telegram pause time (pause time between two telegrams).		
<b>Index:</b>	[0] = Max. processing time [1] = Character delay time [2] = Telegram pause time		
<b>Dependency:</b>	Refer to: p2020, p2030		
<b>Note:</b>	Re p2024[2] (MODBUS): If the field bus baud rate is changed (p2020), the default time setting is restored. The default setting corresponds to a time of 3.5 characters (dependent on the baud rate that has been set).		

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<b>r2029[0...7]</b>	<b>Field bus int error statistics / Field bus error</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the receive errors on the field bus interface (RS485).		
<b>Index:</b>	[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		



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<b>p2030</b>	<b>Field bus int protocol selection / Field bus protocol</b>		
CU240B-2_DP	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	3	3
<b>Description:</b>	Sets the communication protocol for the field bus interface.		
<b>Value:</b>	0: No protocol 3: PROFIBUS		
<b>Notice:</b>	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.		
<b>Note:</b>	Changes only become effective after POWER ON. The parameter is not influenced by setting the factory setting.		

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<b>p2030</b>	<b>Field bus int protocol selection / Field bus protocol</b>		
CU240B-2	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	2	0
<b>Description:</b>	Sets the communication protocol for the field bus interface.		
<b>Value:</b>	0: No protocol 1: USS 2: MODBUS		
<b>Notice:</b>	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.		
<b>Note:</b>	Changes only become effective after POWER ON. The parameter is not influenced by setting the factory setting.		

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<b>p2030</b>	<b>Field bus int protocol selection / Field bus protocol</b>		
CU240E-2_PN_F	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2 PN	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9310
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	10	7
<b>Description:</b>	Sets the communication protocol for the field bus interface.		
<b>Value:</b>	0: No protocol 7: PROFINET 10: Ethernet/IP		
<b>Notice:</b>	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.		
<b>Note:</b>	Changes only become effective after POWER ON. The parameter is not influenced by setting the factory setting.		

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<b>r2032</b>	<b>Master control control word effective / PcCtrl STW eff</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the effective control word 1 (STW1) of the drive for the master control.		

## 2 Parameters

### 2.2 List of parameters

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	Start ramp-function generator	Yes	No	-
	06	Speed setpoint enable	Yes	No	-
	07	Acknowledge fault	Yes	No	-
	08	Jog bit 0	Yes	No	3030
	09	Jog bit 1	Yes	No	3030
	10	Master ctrl by PLC	Yes	No	-

**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

#### p2037

#### PROFIdrive STW1.10 = 0 mode / PD STW1.10=0

CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	0	2	0

**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

**Recommend.:** Do not change the setting p2037 = 0.

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

#### p2038

#### PROFIdrive STW/ZSW interface mode / PD STW/ZSW IF mode

CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	0	2	0

**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.

<b>p2039</b>	<b>Select debug monitor interface / Debug monit select</b>			
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0	3	0	
<b>Description:</b>	The serial interface for the debug monitor is COM1 (commissioning interface, RS232) or COM2 (fieldbus interface, RS485). Value = 0: De-activated Value = 1: COM1, commissioning protocol is de-activated Value = 2: COM2, field bus is de-activated Value = 3: Reserved			
<b>Note:</b>	Value = 2 is only possible for Control Units with RS485 as a field bus interface.			
<b>p2040</b>	<b>Fieldbus interface monitoring time / Fieldbus t_monit</b>			
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
CU240E-2	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 9310	
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2 PN	0 [ms]	1999999 [ms]	100 [ms]	
<b>Description:</b>	Sets the monitoring time to monitor the process data received via the fieldbus interface. If no process data is received within this time, then an appropriate message is output.			
<b>Note:</b>	p2040 = 0: Monitoring is de-activated.			
<b>p2042</b>	<b>PROFIBUS Ident Number / PB Ident No.</b>			
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0	1	0	
<b>Description:</b>	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).			
<b>Value:</b>	0: SINAMICS 1: VIK-NAMUR			
<b>Notice:</b>	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.			
<b>Note:</b>	Every change only becomes effective after a POWER ON.			
<b>r2043.0...2</b>	<b>BO: PROFIdrive PZD state / PD PZD state</b>			
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8	
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2410	
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2 PN	-	-	-	
<b>Description:</b>	Displays the PROFIdrive PZD state.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	Setpoint failure	Yes	No
	02	Fieldbus oper	Yes	No
<b>Dependency:</b>	Refer to: p2044			

## 2 Parameters

### 2.2 List of parameters

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

---

<b>p2044</b>	<b>PROFdrive fault delay / PD fault delay</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2410
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	0 [s]	100 [s]	0 [s]

**Description:** Sets the delay time to initiate fault F01910 after a setpoint failure.  
The time until the fault is initiated can be used by the application. This means that it is possible to respond to the failure while the drive is still operational (e.g. emergency retraction).

**Dependency:** Refer to: r2043

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<b>p2047</b>	<b>PROFIBUS additional monitoring time / PB suppl t_monit</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2410
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	20000 [ms]	0 [ms]

**Description:** Sets the additional monitoring time to monitor the process data received via PROFIBUS.  
Enables short bus faults to be compensated.  
If no process data is received within this time, then an appropriate message is output.

**Note:** For controller STOP, the additional monitoring time is not effective.

---

<b>r2050[0...11]</b>	<b>CO: PROFIBUS PZD receive word / PZD rcv word</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> -	<b>Scaling:</b> 4000H	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2440, 2468, 9360
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**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  
[11] = PZD 12

**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.

---

<b>p2051[0...13]</b>	<b>CI: PROFdrive PZD send word / PZD send word</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Integer16
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> 4000H	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2450, 2470, 9370
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 2089[0] [1] 63[0] [2...13] 0

**Description:** Selects the PZD (actual values) with word format to be sent to the fieldbus controller.

**Index:**

[0]	= PZD 1
[1]	= PZD 2
[2]	= PZD 3
[3]	= PZD 4
[4]	= PZD 5
[5]	= PZD 6
[6]	= PZD 7
[7]	= PZD 8
[8]	= PZD 9
[9]	= PZD 10
[10]	= PZD 11
[11]	= PZD 12
[12]	= PZD 13
[13]	= PZD 14

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

---

### p2051[0...13] CI: PROFIdrive PZD send word / PZD send word

CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Integer16
CU240E-2	<b>Can be changed:</b> U, T	<b>Scaling:</b> 4000H	<b>Dyn. index:</b> -
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2450, 2470, 9370
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**Description:** Selects the PZD (actual values) with word format to be sent to the fieldbus controller.

**Index:**

[0]	= PZD 1
[1]	= PZD 2
[2]	= PZD 3
[3]	= PZD 4
[4]	= PZD 5
[5]	= PZD 6
[6]	= PZD 7
[7]	= PZD 8
[8]	= PZD 9
[9]	= PZD 10
[10]	= PZD 11
[11]	= PZD 12
[12]	= PZD 13
[13]	= PZD 14

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

---

### r2053[0...13] PROFIdrive diagnostics send PZD word / Diag send word

	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2450, 2470, 9370
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Displays the PZD (actual values) with word format sent to the fieldbus controller.

**Index:**

[0]	= PZD 1
[1]	= PZD 2
[2]	= PZD 3
[3]	= PZD 4
[4]	= PZD 5
[5]	= PZD 6
[6]	= PZD 7
[7]	= PZD 8
[8]	= PZD 9
[9]	= PZD 10
[10]	= PZD 11
[11]	= PZD 12
[12]	= PZD 13
[13]	= PZD 14

## 2 Parameters

### 2.2 List of parameters

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Bit 0	ON	OFF	-
	01	Bit 1	ON	OFF	-
	02	Bit 2	ON	OFF	-
	03	Bit 3	ON	OFF	-
	04	Bit 4	ON	OFF	-
	05	Bit 5	ON	OFF	-
	06	Bit 6	ON	OFF	-
	07	Bit 7	ON	OFF	-
	08	Bit 8	ON	OFF	-
	09	Bit 9	ON	OFF	-
	10	Bit 10	ON	OFF	-
	11	Bit 11	ON	OFF	-
	12	Bit 12	ON	OFF	-
	13	Bit 13	ON	OFF	-
	14	Bit 14	ON	OFF	-
	15	Bit 15	ON	OFF	-

---

<b>r2054</b>		<b>PROFIBUS status / PB status</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2410	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0	4	-	
<b>Description:</b>	Status display for the PROFIBUS interface.			
<b>Value:</b>	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			

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<b>r2055[0...2]</b>		<b>PROFIBUS diagnostics standard / PB diag standard</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2410	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	-	
<b>Description:</b>	Diagnostics display for the PROFIBUS interface.			
<b>Index:</b>	[0] = Master bus address [1] = Master input total length bytes [2] = Master output total length bytes			

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<b>r2057</b>		<b>PROFIBUS address switch diagnostics / PB addr_sw diag</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2410	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	-	
<b>Description:</b>	Displays the setting of the PROFIBUS address switch "DP ADDRESS" on the Control Unit.			
<b>Dependency:</b>	Refer to: p0918			
<b>Notice:</b>	The display is updated after switching on, and not cyclically.			

---

<b>r2060[0...10]</b>	<b>CO: PROFIdrive PZD receive double word / PZD recv DW</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer32
	<b>Can be changed:</b> -	<b>Scaling:</b> 4000H	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2440, 2468
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Connector output to interconnect PZD (setpoints) with double word format received from the fieldbus controller.		
<b>Index:</b>	[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		
<b>Dependency:</b>	Refer to: r2050		
<b>Notice:</b>	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.		

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<b>p2061[0...12]</b>	<b>CI: PROFIBUS PZD send double word / PZD send DW</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Integer32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> 4000H	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2470
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Selects the PZD (actual values) with double word format to be sent to the fieldbus controller.		
<b>Index:</b>	[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 [11] = PZD 12 + 13 [12] = PZD 13 + 14		
<b>Dependency:</b>	Refer to: p2051		
<b>Notice:</b>	A BICO interconnection for a single PZD can only take place either on p2051 or p2061. The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		

---

<b>r2063[0...12]</b>	<b>PROFIdrive diagnostics PZD send double word / Diag send DW</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2470
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the PZD (actual values) with double word format sent to the fieldbus controller.		
<b>Index:</b>	[0] = PZD 1 + 2 [1] = PZD 2 + 3 [2] = PZD 3 + 4		

## 2 Parameters

### 2.2 List of parameters

[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  
 [11] = PZD 12 + 13  
 [12] = PZD 13 + 14

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Bit 0	ON	OFF	-
	01	Bit 1	ON	OFF	-
	02	Bit 2	ON	OFF	-
	03	Bit 3	ON	OFF	-
	04	Bit 4	ON	OFF	-
	05	Bit 5	ON	OFF	-
	06	Bit 6	ON	OFF	-
	07	Bit 7	ON	OFF	-
	08	Bit 8	ON	OFF	-
	09	Bit 9	ON	OFF	-
	10	Bit 10	ON	OFF	-
	11	Bit 11	ON	OFF	-
	12	Bit 12	ON	OFF	-
	13	Bit 13	ON	OFF	-
	14	Bit 14	ON	OFF	-
	15	Bit 15	ON	OFF	-
	16	Bit 16	ON	OFF	-
	17	Bit 17	ON	OFF	-
	18	Bit 18	ON	OFF	-
	19	Bit 19	ON	OFF	-
	20	Bit 20	ON	OFF	-
	21	Bit 21	ON	OFF	-
	22	Bit 22	ON	OFF	-
	23	Bit 23	ON	OFF	-
	24	Bit 24	ON	OFF	-
	25	Bit 25	ON	OFF	-
	26	Bit 26	ON	OFF	-
	27	Bit 27	ON	OFF	-
	28	Bit 28	ON	OFF	-
	29	Bit 29	ON	OFF	-
	30	Bit 30	ON	OFF	-
	31	Bit 31	ON	OFF	-

**Notice:** A maximum of 4 indices of the "trace" function can be used.

#### r2067[0...1]

#### PZD maximum interconnected / PZDmaxIntercon

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Display for the maximum interconnected PZD in the receive/send direction  
 Index 0: receive (r2050, r2060)  
 Index 1: send (p2051, p2061)



<b>p2071</b>		<b>PROFIdrive SIC/SCC start send / SIC/SCC start send</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8	
CU240E-2_PN_F	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2423	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0	30	2	
<b>Description:</b>	Sets the start for the SIC/SCC telegram (p60122) in the send words (p2051, p2061).			
<b>Dependency:</b>	Refer to: p0922, p2079, p60122			
<b>Note:</b>	For setting p0922/p2079, the value is preset to the end of the PZD telegram. For p0922 equal to 999 and p2079 not equal to 999, the preset value can be increased. The value must be set again after changing p0922/p2079.			

<b>p2072</b>		<b>Response receive value after PZD failure / Resp aft PZD fail</b>			
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 bin		
<b>Description:</b>	Sets the response for the receive value (r2090) after PZD failure.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Unconditionally open holding brake (p0855)	Freeze value	Zero the value	-

<b>r2074[0...11]</b>		<b>PROFIdrive diagnostics bus address PZD receive / Diag addr rcv</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	-	
<b>Description:</b>	Displays the PROFIBUS address of the sender from which the process data (PZD) is received.			
<b>Index:</b>	[0] = PZD 1 [1] = PZD 2 [2] = PZD 3 [3] = PZD 4 [4] = PZD 5 [5] = PZD 6 [6] = PZD 7 [7] = PZD 8 [8] = PZD 9 [9] = PZD 10 [10] = PZD 11 [11] = PZD 12			
<b>Note:</b>	Value range: 0 - 125: Bus address of the sender 65535: Not assigned			

<b>r2075[0...11]</b>		<b>PROFIdrive diagnostics telegram offset PZD receive / Diag offs rcv</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2410	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	-	
<b>Description:</b>	Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).			
<b>Index:</b>	[0] = PZD 1 [1] = PZD 2			

## 2 Parameters

### 2.2 List of parameters

[2] = PZD 3  
 [3] = PZD 4  
 [4] = PZD 5  
 [5] = PZD 6  
 [6] = PZD 7  
 [7] = PZD 8  
 [8] = PZD 9  
 [9] = PZD 10  
 [10] = PZD 11  
 [11] = PZD 12

**Note:** Value range:  
 0 - 242: Byte offset  
 65535: Not assigned

---

<b>r2076[0...13]</b>	<b>PROFIdrive diagnostics telegram offset PZD send / Diag offs send</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2410
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Displays the PZD byte offset in the PROFIdrive send telegram (controller input).

**Index:** [0] = PZD 1  
 [1] = PZD 2  
 [2] = PZD 3  
 [3] = PZD 4  
 [4] = PZD 5  
 [5] = PZD 6  
 [6] = PZD 7  
 [7] = PZD 8  
 [8] = PZD 9  
 [9] = PZD 10  
 [10] = PZD 11  
 [11] = PZD 12  
 [12] = PZD 13  
 [13] = PZD 14

**Note:** Value range:  
 0 - 242: Byte offset  
 65535: Not assigned

---

<b>r2077[0...15]</b>	<b>PROFIBUS diagnostics peer-to-peer data transfer addresses / PB diag peer addr</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	-

**Description:** Displays the addresses of the slaves (peers) where peer-to-peer data transfer has been configured via PROFIBUS.

---

<b>p2079</b>	<b>PROFIdrive PZD telegram selection extended / PZD telegr ext</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2_DP	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	1	999	1

**Description:** Sets the send and receive telegram.  
 Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

**Value:** 1: Standard telegram 1, PZD-2/2  
 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

**Note:**

For p0922 < 999 the following applies:

p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:

p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:

The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

**p2080[0...15]****BI: Binector-connector converter status word 1 / Bin/con ZSW1**

	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240B-2_DP			
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2472
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 899.0
			[1] 899.1
			[2] 899.2
			[3] 2139.3
			[4] 899.4
			[5] 899.5
			[6] 899.6
			[7] 2139.7
			[8] 2197.7
			[9] 899.9
			[10] 2199.1
			[11] 1407.7
			[12] 899.12
			[13] 2135.14
			[14] 2197.3
			[15] 2135.15

**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  
 [11] = Bit 11  
 [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.

---

<b>p2080[0...15]</b>	<b>BI: Binector-connector converter status word 1 / Bin/con ZSW1</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2472
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Selects bits to be sent to the PROFIdrive controller. The individual bits are combined to form status word 1.		
<b>Index:</b>	[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 [11] = Bit 11 [12] = Bit 12 [13] = Bit 13 [14] = Bit 14 [15] = Bit 15		
<b>Dependency:</b>	Refer to: p2088, r2089		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		

---

<b>p2081[0...15]</b>	<b>BI: Binector-connector converter status word 2 / Bin/con ZSW2</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2472
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Selects bits to be sent to the PROFIdrive controller. The individual bits are combined to form status word 2.		
<b>Index:</b>	[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 [11] = Bit 11 [12] = Bit 12 [13] = Bit 13 [14] = Bit 14 [15] = Bit 15		
<b>Dependency:</b>	Refer to: p2088, r2089		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		

---

<b>p2082[0...15]</b>	<b>BI: Binector-connector converter status word 3 / Bin/con ZSW3</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2472
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Selects bits to be sent to the PROFIdrive controller. The individual bits are combined to form free status word 3.		
<b>Index:</b>	[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 [11] = Bit 11 [12] = Bit 12 [13] = Bit 13 [14] = Bit 14 [15] = Bit 15		
<b>Dependency:</b>	Refer to: p2088, r2089		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		

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<b>p2083[0...15]</b>	<b>BI: Binector-connector converter status word 4 / Bin/con ZSW4</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2472
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Selects bits to be sent to the PROFIdrive controller. The individual bits are combined to form free status word 4.		
<b>Index:</b>	[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 [11] = Bit 11 [12] = Bit 12 [13] = Bit 13 [14] = Bit 14 [15] = Bit 15		
<b>Dependency:</b>	Refer to: p2088, r2089		

<b>p2084[0...15]</b>	<b>BI: Binector-connector converter status word 5 / Bin/con ZSW5</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2472
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	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  
 [11] = Bit 11  
 [12] = Bit 12  
 [13] = Bit 13  
 [14] = Bit 14  
 [15] = Bit 15

**Dependency:** Refer to: p2088, r2089

<b>p2088[0...4]</b>	<b>Invert binector-connector converter status word / Bin/con ZSW inv</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2472
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[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

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	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

<b>p2088[0...4]</b>		<b>Invert binector-connector converter status word / Bin/con ZSW inv</b>			
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
CU240E-2	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2472		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 0000 0000 0000 bin		
<b>Description:</b>	Setting to invert the individual binector inputs of the binector connector converter.				
<b>Index:</b>	[0] = Status word 1 [1] = Status word 2 [2] = Free status word 3 [3] = Free status word 4 [4] = Free status word 5				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	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	-
<b>Dependency:</b>	Refer to: p2080, p2081, p2082, p2083, r2089				

<b>r2089[0...4]</b>		<b>CO: Send binector-connector converter status word / Bin/con ZSW send</b>			
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2472		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Connector output to interconnect the status words to a PZD send word.				
<b>Index:</b>	[0] = Status word 1 [1] = Status word 2 [2] = Free status word 3 [3] = Free status word 4 [4] = Free status word 5				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Bit 0	ON	OFF	-
	01	Bit 1	ON	OFF	-
	02	Bit 2	ON	OFF	-
	03	Bit 3	ON	OFF	-
	04	Bit 4	ON	OFF	-
	05	Bit 5	ON	OFF	-
	06	Bit 6	ON	OFF	-
	07	Bit 7	ON	OFF	-
	08	Bit 8	ON	OFF	-
	09	Bit 9	ON	OFF	-
	10	Bit 10	ON	OFF	-
	11	Bit 11	ON	OFF	-
	12	Bit 12	ON	OFF	-

## 2 Parameters

### 2.2 List of parameters

13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

**Dependency:** Refer to: p2051, p2080, p2081, p2082, p2083  
**Note:** r2089 together with p2080 to p2084 forms five binector-connector converters.

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#### r2090.0...15 **BO: PROFIdrive PZD1 receive bit-serial / PZD1 recv bitw**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2468, 9360
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Binector output for bit-serial interconnection of PZD1 (normally control word 1) received from the PROFIdrive controller.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Bit 0	ON	OFF	-
	01	Bit 1	ON	OFF	-
	02	Bit 2	ON	OFF	-
	03	Bit 3	ON	OFF	-
	04	Bit 4	ON	OFF	-
	05	Bit 5	ON	OFF	-
	06	Bit 6	ON	OFF	-
	07	Bit 7	ON	OFF	-
	08	Bit 8	ON	OFF	-
	09	Bit 9	ON	OFF	-
	10	Bit 10	ON	OFF	-
	11	Bit 11	ON	OFF	-
	12	Bit 12	ON	OFF	-
	13	Bit 13	ON	OFF	-
	14	Bit 14	ON	OFF	-
	15	Bit 15	ON	OFF	-

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#### r2091.0...15 **BO: PROFIdrive PZD2 receive bit-serial / PZD2 recv bitw**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2468
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Binector output for bit-serial interconnection of PZD2 received from the PROFIdrive controller.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Bit 0	ON	OFF	-
	01	Bit 1	ON	OFF	-
	02	Bit 2	ON	OFF	-
	03	Bit 3	ON	OFF	-
	04	Bit 4	ON	OFF	-
	05	Bit 5	ON	OFF	-
	06	Bit 6	ON	OFF	-
	07	Bit 7	ON	OFF	-
	08	Bit 8	ON	OFF	-
	09	Bit 9	ON	OFF	-
	10	Bit 10	ON	OFF	-
	11	Bit 11	ON	OFF	-
	12	Bit 12	ON	OFF	-
	13	Bit 13	ON	OFF	-
	14	Bit 14	ON	OFF	-
	15	Bit 15	ON	OFF	-



**r2092.0...15****BO: PROFIdrive PZD3 receive bit-serial / PZD3 recv bitw**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2468
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:**

Binector output for bit-serial interconnection of PZD3 received from the PROFIdrive controller.

**Bit field:**

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

**r2093.0...15****BO: PROFIdrive PZD4 receive bit-serial / PZD4 recv bitw**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2468
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:**

Binector output for bit-serial interconnection of PZD4 (normally control word 2) received from the PROFIdrive controller.

**Bit field:**

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

**r2094.0...15**

**BO: Connector-binector converter binector output / Con/bin outp**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2468, 9360
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Binector output for bit-serial onward interconnection of a PZD word received from the PROFIdrive controller. The PZD is selected via p2099[0].

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Bit 0	ON	OFF	-
	01	Bit 1	ON	OFF	-
	02	Bit 2	ON	OFF	-
	03	Bit 3	ON	OFF	-
	04	Bit 4	ON	OFF	-
	05	Bit 5	ON	OFF	-
	06	Bit 6	ON	OFF	-
	07	Bit 7	ON	OFF	-
	08	Bit 8	ON	OFF	-
	09	Bit 9	ON	OFF	-
	10	Bit 10	ON	OFF	-
	11	Bit 11	ON	OFF	-
	12	Bit 12	ON	OFF	-
	13	Bit 13	ON	OFF	-
	14	Bit 14	ON	OFF	-
	15	Bit 15	ON	OFF	-

**Dependency:** Refer to: p2099

**r2095.0...15**

**BO: Connector-binector converter binector output / Con/bin outp**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2468, 9360
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Binector output for bit-serial interconnection of a PZD word received from the PROFIdrive controller. The PZD is selected via p2099[1].

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Bit 0	ON	OFF	-
	01	Bit 1	ON	OFF	-
	02	Bit 2	ON	OFF	-
	03	Bit 3	ON	OFF	-
	04	Bit 4	ON	OFF	-
	05	Bit 5	ON	OFF	-
	06	Bit 6	ON	OFF	-
	07	Bit 7	ON	OFF	-
	08	Bit 8	ON	OFF	-
	09	Bit 9	ON	OFF	-
	10	Bit 10	ON	OFF	-
	11	Bit 11	ON	OFF	-
	12	Bit 12	ON	OFF	-
	13	Bit 13	ON	OFF	-
	14	Bit 14	ON	OFF	-
	15	Bit 15	ON	OFF	-

**Dependency:** Refer to: p2099

<b>p2098[0...1]</b>		<b>Inverter connector-binector converter binector output / Con/bin outp inv</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2468, 9360	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	0000 0000 0000 0000 bin	
<b>Description:</b>	Setting to invert the individual binector outputs of the connector-binector converter. Using p2098[0], the signals of connector input p2099[0] are influenced. Using p2098[1], the signals of connector input p2099[1] are influenced.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	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
<b>Dependency:</b>	Refer to: r2094, r2095, p2099			
<b>p2099[0...1]</b>		<b>CI: Connector-binector converter signal source / Con/bin S_src</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Integer16	
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2468, 9360	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	0	
<b>Description:</b>	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).			
<b>Dependency:</b>	Refer to: r2094, r2095			
<b>Note:</b>	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			
<b>p2100[0...19]</b>		<b>Change fault response fault number / Chng resp F_no</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8075	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0	65535	0	
<b>Description:</b>	Selects the faults for which the fault response should be changed			
<b>Dependency:</b>	The fault is selected and the required response is set under the same index. Refer to: p2101			
<b>Note:</b>	Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.			

<b>p2101[0...19]</b>	<b>Change fault response response / Chng resp resp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8075
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	6	0
<b>Description:</b>	Sets the fault response for the selected fault.		
<b>Value:</b>	0: NONE 1: OFF1 2: OFF2 3: OFF3 5: STOP2 6: Internal armature short-circuit / DC braking		
<b>Dependency:</b>	The fault is selected and the required response is set under the same index. Refer to: p2100		
<b>Notice:</b>	For the following cases, it is not possible to re-parameterize the fault response to a fault: - Fault number does not exist (exception value = 0). - Message type is not "fault" (F). - Fault response is not permissible for the set fault number.		
<b>Note:</b>	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 (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.		

<b>p2103[0...n]</b>	<b>BI: 1. Acknowledge faults / 1. Acknowledge</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2441, 2442, 2443, 2447, 2475, 2546, 9220, 9677, 9678
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2 PN	-	-	[0] 2090.7 [1] 722.2 [2] 2090.7 [3] 2090.7
<b>Description:</b>	Sets the first signal source to acknowledge faults.		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>Note:</b>	A fault acknowledgement is triggered with a 0/1 signal.		

<b>p2103[0...n]</b>	<b>BI: 1. Acknowledge faults / 1. Acknowledge</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2441, 2442, 2443, 2447, 2475, 2546, 9220, 9677, 9678
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	[0] 722.2
			[1] 0
			[2] 0
			[3] 0
<b>Description:</b>	Sets the first signal source to acknowledge faults.		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>Note:</b>	A fault acknowledgement is triggered with a 0/1 signal.		
<b>p2104[0...n]</b>	<b>BI: 2. Acknowledge faults / 2. Acknowledge</b>		
CU240B-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2_DP	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2546, 8060
CU240E-2_PN_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN	-	-	[0] 722.2
			[1] 0
			[2] 0
			[3] 0
<b>Description:</b>	Sets the second signal source to acknowledge faults.		
<b>Note:</b>	A fault acknowledgement is triggered with a 0/1 signal.		
<b>p2104[0...n]</b>	<b>BI: 2. Acknowledge faults / 2. Acknowledge</b>		
CU240B-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
CU240E-2_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2546, 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the second signal source to acknowledge faults.		
<b>Note:</b>	A fault acknowledgement is triggered with a 0/1 signal.		
<b>p2105[0...n]</b>	<b>BI: 3. Acknowledge faults / 3. Acknowledge</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2546, 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the third signal source to acknowledge faults.		
<b>Note:</b>	A fault acknowledgement is triggered with a 0/1 signal.		
<b>p2106[0...n]</b>	<b>BI: External fault 1 / External fault 1</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2546
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	Sets the signal source for external fault 1.		
<b>Note:</b>	An external fault is triggered with a 1/0 signal.		

## 2 Parameters

### 2.2 List of parameters

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<b>p2107[0...n]</b>	<b>BI: External fault 2 / External fault 2</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2546
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	Sets the signal source for external fault 2.		
<b>Note:</b>	An external fault is triggered with a 1/0 signal.		
<hr/>			
<b>p2108[0...n]</b>	<b>BI: External fault 3 / External fault 3</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2546
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	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		
<b>Dependency:</b>	Refer to: p3110, p3111, p3112		
<b>Note:</b>	An external fault is triggered with a 1/0 signal.		
<hr/>			
<b>r2109[0...63]</b>	<b>Fault time removed in milliseconds / t_fit resolved ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ms]	- [ms]	- [ms]
<b>Description:</b>	Displays the system runtime in milliseconds when the fault was removed.		
<b>Dependency:</b>	Refer to: r0945, r0947, r0948, r0949, r2130, r2133, r2136		
<b>Notice:</b>	The time comprises r2136 (days) and r2109 (milliseconds).		
<b>Note:</b>	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.		
<hr/>			
<b>r2110[0...63]</b>	<b>Alarm number / Alarm number</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8065
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	This parameter is identical to r2122.		
<hr/>			
<b>p2111</b>	<b>Alarm counter / Alarm counter</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8065
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	65535	0
<b>Description:</b>	Number of alarms that have occurred after the last reset.		

**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.  
 Refer to: r2110, r2122, r2123, r2124, r2125

**Note:** The parameter is reset to 0 at POWER ON.

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**p2112[0...n]**      **BI: External alarm 1 / External alarm 1**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2546
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	1

**Description:** Sets the signal source for external alarm 1.  
**Note:** An external alarm is triggered with a 1/0 signal.

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**r2114[0...1]**      **System runtime total / Sys runtime tot**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Displays the total system runtime for the drive unit.  
 The time comprises r2114[0] (milliseconds) and r2114[1] (days).  
 After r2114[0] has reached a value of 86.400.000 ms (24 hours) this value is reset and r2114[1] is incremented.

**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.

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**p2116[0...n]**      **BI: External alarm 2 / External alarm 2**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2546
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	1

**Description:** Sets the signal source for external alarm 2.  
**Note:** An external alarm is triggered with a 1/0 signal.

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**p2117[0...n]**      **BI: External alarm 3 / External alarm 3**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2546
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	1

**Description:** Sets the signal source for external alarm 3.  
**Note:** An external alarm is triggered with a 1/0 signal.

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<b>p2118[0...19]</b>	<b>Change message type message number / Chng type msg_no</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8075
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	65535	0
<b>Description:</b>	Selects faults or alarms for which the message type should be changed.		
<b>Dependency:</b>	Selects the fault or alarm selection and sets the required type of message realized under the same index. Refer to: p2119		
<b>Note:</b>	Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.		

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<b>p2119[0...19]</b>	<b>Change message type type / Change type type</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8075
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	3	1
<b>Description:</b>	Sets the message type for the selected fault or alarm.		
<b>Value:</b>	1: Fault (F) 2: Alarm (A) 3: No message (N)		
<b>Dependency:</b>	Selects the fault or alarm selection and sets the required type of message realized under the same index. Refer to: p2118		
<b>Note:</b>	Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone. The message type can only be changed for messages with the appropriate identification (exception, value = 0). Example: F12345(A) --> Fault F12345 can be changed to alarm A12345. In this case, the message number that may be possibly entered in p2100[0...19] and p2126[0...19] is automatically removed.		

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<b>r2120</b>	<b>CO: Sum of fault and alarm buffer changes / Sum buffer changed</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8065
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the sum of all of the fault and alarm buffer changes in the drive unit.		
<b>Dependency:</b>	Refer to: r0944, r2121		

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<b>r2121</b>	<b>CO: Counter alarm buffer changes / Alrm buff changed</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8065
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	This counter is incremented every time the alarm buffer changes.		
<b>Dependency:</b>	Refer to: r2110, r2122, r2123, r2124, r2125		



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<b>r2122[0...63]</b>	<b>Alarm code / Alarm code</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8065
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the number of alarms that have occurred.		
<b>Dependency:</b>	Refer to: r2110, r2123, r2124, r2125, r2134, r2145, r2146, r3121, r3123		
<b>Notice:</b>	The properties of the alarm buffer should be taken from the corresponding product documentation.		
<b>Note:</b>	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)		

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<b>r2123[0...63]</b>	<b>Alarm time received in milliseconds / t_alarm recv ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8065
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ms]	- [ms]	- [ms]
<b>Description:</b>	Displays the system runtime in milliseconds when the alarm occurred.		
<b>Dependency:</b>	Refer to: r2110, r2122, r2124, r2125, r2134, r2145, r2146		
<b>Notice:</b>	The time comprises r2145 (days) and r2123 (milliseconds).		
<b>Note:</b>	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.		

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<b>r2124[0...63]</b>	<b>Alarm value / Alarm value</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8065
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays additional information about the active alarm (as integer number).		
<b>Dependency:</b>	Refer to: r2110, r2122, r2123, r2125, r2134, r2145, r2146, r3121, r3123		
<b>Note:</b>	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.		

---

<b>r2125[0...63]</b>	<b>Alarm time removed in milliseconds / t_alarm res ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8065
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ms]	- [ms]	- [ms]
<b>Description:</b>	Displays the system runtime in milliseconds when the alarm was cleared.		
<b>Dependency:</b>	Refer to: r2110, r2122, r2123, r2124, r2134, r2145, r2146		
<b>Notice:</b>	The time comprises r2146 (days) and r2125 (milliseconds).		

## 2 Parameters

### 2.2 List of parameters

**Note:** The buffer parameters are cyclically updated in the background (refer to status signal in r2139).  
The structure of the alarm buffer and the assignment of the indices is shown in r2122.

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<b>p2126[0...19]</b>	<b>Change acknowledge mode fault number / Chng ackn F_no</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8075	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0	65535	0	
<b>Description:</b>	Selects the faults for which the acknowledge mode is to be changed		
<b>Dependency:</b>	Selects the faults and sets the required acknowledge mode realized under the same index Refer to: p2127		
<b>Note:</b>	Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.		

---

<b>p2127[0...19]</b>	<b>Change acknowledge mode mode / Chng ackn mode</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8075	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
1	2	1	
<b>Description:</b>	Sets the acknowledge mode for selected fault.		
<b>Value:</b>	1: Acknowledgment only using POWER ON 2: Ack IMMEDIATELY after the fault cause has been removed		
<b>Dependency:</b>	Selects the faults and sets the required acknowledge mode realized under the same index Refer to: p2126		
<b>Notice:</b>	It is not possible to re-parameterize the acknowledge mode for a fault in the following cases: - Fault number does not exist (exception value = 0). - Message type is not "fault" (F). - Acknowledge mode is not permissible for the set fault number.		
<b>Note:</b>	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.		

---

<b>p2128[0...15]</b>	<b>Faults/alarms trigger selection / F/A trigger sel</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8050, 8070	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0	65535	0	
<b>Description:</b>	Sets the faults/alarms for which a trigger signal should be generated in r2129.0...15.		
<b>Dependency:</b>	If the fault/alarm set in p2128[0...15] occurs, then the particular binector output r2129.0...15 is set. Refer to: r2129		

---

<b>r2129.0...15</b>	<b>CO/BO: Faults/alarms trigger signal / F/A trigger signal</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8070	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	
<b>Description:</b>	Display and BICO output for the trigger signals of the faults/alarms set in p2128[0...15].		

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 the fault/alarm set in p2128[0...15] occurs, then the particular binector output r2129.0...15 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.

---

### r2130[0...63] Fault time received in days / t\_fault rcv days

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8060
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Displays the system runtime in days when the fault occurred.

**Dependency:** Refer to: r0945, r0947, r0948, r0949, r2109, r2133, r2136

**Notice:** The time comprises r2130 (days) and r0948 (milliseconds).

The value displayed in p2130 refers to 01.01.1970.

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

---

### r2131 CO: Actual fault code / Act fault code

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8060
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Displays the code of the oldest active fault.

**Dependency:** Refer to: r3131, r3132

**Note:** 0: No fault present.

---

### r2132 CO: Actual alarm code / Actual alarm code

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8065
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Displays the code of the last alarm that occurred.

**Note:** 0: No alarm present.

<b>r2133[0...63]</b>	<b>Fault value for float values / Fault val float</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8060	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	
<b>Description:</b>	Displays additional information about the fault that occurred for float values.		
<b>Dependency:</b>	Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2136		
<b>Note:</b>	The buffer parameters are cyclically updated in the background (refer to status signal in r2139).		

<b>r2134[0...63]</b>	<b>Alarm value for float values / Alarm value float</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8065	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	
<b>Description:</b>	Displays additional information about the active alarm for float values.		
<b>Dependency:</b>	Refer to: r2110, r2122, r2123, r2124, r2125, r2145, r2146, r3121, r3123		
<b>Note:</b>	The buffer parameters are cyclically updated in the background (refer to status signal in r2139).		

<b>r2135.12...15</b>	<b>CO/BO: Status word faults/alarms 2 / ZSW fault/alarm 2</b>			
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2548		
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
-	-	-		
<b>Description:</b>	Display and BICO output for the second status word of faults and alarms.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	12	Fault motor overtemperature	Yes	No
	13	Fault power unit thermal overload	Yes	No
	14	Alarm motor overtemperature	Yes	No
	15	Alarm power unit thermal overload	Yes	No
				<b>FP</b>
				8016
				8014
				8016
				8014

<b>r2136[0...63]</b>	<b>Fault time removed in days / t_fit resolv days</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8060	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	
<b>Description:</b>	Displays the system runtime in days when the fault was removed.		
<b>Dependency:</b>	Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133		
<b>Notice:</b>	The time comprises r2136 (days) and r2109 (milliseconds).		
<b>Note:</b>	The buffer parameters are cyclically updated in the background (refer to status signal in r2139).		

<b>r2138.7...15</b>	<b>CO/BO: Control word faults/alarms / STW fault/alarm</b>		
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2546	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	
<b>Description:</b>	Display and BICO output for the control word of faults and alarms.		

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	07	Acknowledge fault	Yes	No	8060
	10	External alarm 1 (A07850) effective	Yes	No	8065
	11	External alarm 2 (A07851) effective	Yes	No	8065
	12	External alarm 3 (A07852) effective	Yes	No	8065
	13	External fault 1 (F07860) effective	Yes	No	8060
	14	External fault 2 (F07861) effective	Yes	No	8060
	15	External fault 3 (F07862) effective	Yes	No	8060

**Dependency:** Refer to: p2103, p2104, p2105, p2106, p2107, p2108, p2112, p2116, p2117, p3110, p3111, p3112

**r2139.0...15****CO/BO: Status word faults/alarms 1 / ZSW fault/alarm 1**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2548
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Display and BICO output for status word 1 of faults and alarms.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Being acknowledged	Yes	No	-
	01	Acknowledgment required	Yes	No	-
	03	Fault present	Yes	No	8060
	06	Internal message 1 present	Yes	No	-
	07	Alarm present	Yes	No	8065
	08	Internal message 2 present	Yes	No	-
	11	Alarm class bit 0	High	Low	-
	12	Alarm class bit 1	High	Low	-
	13	Maintenance required	Yes	No	-
	14	Maintenance urgently required	Yes	No	-
	15	Fault gone/can be acknowledged	Yes	No	-

**Note:** 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" or "alarm present" has occurred, a change in the buffer was also detected (r0944, r9744, r2121).

Re bit 06, 08:  
These status bits are used for internal diagnostic purposes only.

Re bit 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.

**p2140[0...n]****Hysteresis speed 2 / n\_hysteresis 2**

<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8010
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.00 [rpm]	300.00 [rpm]	90.00 [rpm]

**Description:** Sets the hysteresis speed (bandwidth) for the following signals:  
"|n\_act| <= speed threshold value 2" (BO: r2197.1)  
"|n\_act| > speed threshold value 2" (BO: r2197.2)

**Dependency:** Refer to: p2155, r2197

**p2141[0...n]****Speed threshold 1 / n\_thresh val 1**

<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8010
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.00 [rpm]	210000.00 [rpm]	5.00 [rpm]

**Description:** Sets the speed threshold value for the signal "f or n comparison value reached or exceeded" (BO: r2199.1).

## 2 Parameters

### 2.2 List of parameters

**Dependency:** Refer to: p2142, r2199

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<b>p2142[0...n]</b>	<b>Hysteresis speed 1 / n_hysteresis 1</b>		
<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8010	
<b>Min</b> 0.00 [rpm]	<b>Max</b> 300.00 [rpm]	<b>Factory setting</b> 2.00 [rpm]	
<b>Description:</b>	Sets the hysteresis speed (bandwidth) for the signal "f or n / v comparison value reached or exceeded" (BO: r2199.1).		
<b>Dependency:</b>	Refer to: p2141, r2199		

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<b>p2144[0...n]</b>	<b>BI: Motor stall monitoring enable (negated) / Mot stall enab neg</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8012	
<b>Min</b> -	<b>Max</b> -	<b>Factory setting</b> 0	
<b>Description:</b>	Sets the signal source for the negated enable (0 = enable) of the motor stall monitoring.		
<b>Dependency:</b>	Refer to: p2163, p2164, p2166, r2197, r2198		
<b>Note:</b>	When interconnecting the enable signal with r2197.7 then the stall signal is suppressed if there is no speed setpoint - actual value deviation.		

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<b>r2145[0...63]</b>	<b>Alarm time received in days / t_alarm recv days</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8065	
<b>Min</b> -	<b>Max</b> -	<b>Factory setting</b> -	
<b>Description:</b>	Displays the system runtime in days when the alarm occurred.		
<b>Dependency:</b>	Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2146		
<b>Notice:</b>	The time comprises r2145 (days) and r2123 (milliseconds).		
<b>Note:</b>	The buffer parameters are cyclically updated in the background (refer to status signal in r2139).		

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<b>r2146[0...63]</b>	<b>Alarm time removed in days / t_alarm res days</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8065	
<b>Min</b> -	<b>Max</b> -	<b>Factory setting</b> -	
<b>Description:</b>	Displays the system runtime in days when the alarm was cleared.		
<b>Dependency:</b>	Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2145		
<b>Notice:</b>	The time comprises r2146 (days) and r2125 (milliseconds).		
<b>Note:</b>	The buffer parameters are cyclically updated in the background (refer to status signal in r2139).		

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<b>p2148[0...n]</b>	<b>BI: RFG active / RFG active</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8011
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	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)		
<b>Notice:</b>	The parameter may be protected as a result of p0922 or p2079 and cannot be changed.		
<b>Note:</b>	The binector input is automatically interconnected to r1199.2 as a default setting.		

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<b>p2149[0...n]</b>	<b>Monitoring configuration / Monit config</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 1001 bin		
<b>Description:</b>	Sets the configuration for messages and monitoring functions.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Enable alarm A07903	Yes	No	8011
	01	Load monitoring only in the 1st quadrant	Yes	No	8013
	03	n_act > p2155 own hysteresis	Yes	No	8010
	05	Stall monitoring for encoderless speed control	Yes	No	-
<b>Dependency:</b>	Refer to: r2197				
<b>Note:</b>	Re bit 00: Alarm A07903 is output when the bit is set with r2197.7 = 0 (n_set <> n_act). Re bit 01: When the bit is set, load monitoring is only carried out in the 1st quadrant as a result of the positive characteristic parameters (p2182 ... p2190). Re bit 03: When the bit is set, r2197.1 and r2197.2 are determined using separate hysteresis functions. Re bit 05: When this bit is set, a change to open-loop speed controlled operation is only possible when the motor is stationary.				

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<b>p2150[0...n]</b>	<b>Hysteresis speed 3 / n_hysteresis 3</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8010, 8011, 8020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	300.00 [rpm]	2.00 [rpm]
<b>Description:</b>	Sets the hysteresis speed (bandwidth) for the following signals: " n_act  < speed threshold value 3" (BO: r2199.0) "n_set >= 0" (BO: r2198.5) "n_act >= 0" (BO: r2197.3)		
<b>Dependency:</b>	Refer to: p2161, r2197, r2199		

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<b>p2151[0...n]</b>	<b>Cl: Speed setpoint for messages/signals / n_set for msg</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8011
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	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, r2198, r2199

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<b>p2152[0...n]</b>	<b>Delay for comparison n &gt; n_max / Del n &gt; n_max</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	10000 [ms]	200 [ms]

**Description:** Delay time for the comparison of the speed with the maximum speed.

**Dependency:** Refer to: p1082, r1084, r1087, p2162

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<b>p2153[0...n]</b>	<b>Speed actual value filter time constant / n_act_filt T</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	1000000 [ms]	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

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<b>p2155[0...n]</b>	<b>Speed threshold 2 / n_thresh val 2</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	210000.00 [rpm]	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

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<b>p2156[0...n]</b>	<b>On delay comparison value reached / t_on cmpr val rchd</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [ms]	10000.0 [ms]	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

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<b>p2157[0...n]</b>	<b>Speed threshold 5 / n_thresh val 5</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]
<b>Description:</b>	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)		
<b>Dependency:</b>	Refer to: p2150, p2158		
<b>p2158[0...n]</b>	<b>Delay for n_act comparison with speed threshold value 5 / Del compar n_5</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	10000 [ms]	10 [ms]
<b>Description:</b>	Delay time for the comparison of the speed with the speed threshold value 5 (P2157).		
<b>Dependency:</b>	Refer to: p2150, p2157		
<b>p2159[0...n]</b>	<b>Speed threshold 6 / n_thresh val 6</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	210000.00 [rpm]	900.00 [rpm]
<b>Description:</b>	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)		
<b>Dependency:</b>	Refer to: p2150, p2160		
<b>p2160[0...n]</b>	<b>Delay for n_act comparison with speed threshold value 6 / Del compar n_6</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	10000 [ms]	10 [ms]
<b>Description:</b>	Sets the delay time for the comparison of the speed with the speed threshold value 6 (p2159).		
<b>Dependency:</b>	Refer to: p2150, p2159		
<b>p2161[0...n]</b>	<b>Speed threshold 3 / n_thresh val 3</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8010, 8011
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	210000.00 [rpm]	5.00 [rpm]
<b>Description:</b>	Sets the speed threshold value for the signal " n_act  < speed threshold value 3" (BO: r2199.0).		
<b>Dependency:</b>	Refer to: p2150, r2199		

<b>p2162[0...n]</b>	<b>Hysteresis speed <math>n_{act} &gt; n_{max}</math> / Hyst <math>n_{act} &gt; n_{max}</math></b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8010
	<b>Min</b> 0.00 [rpm]	<b>Max</b> 60000.00 [rpm]	<b>Factory setting</b> 0.00 [rpm]
<b>Description:</b>	Sets the hysteresis speed (bandwidth) for the signal " $n_{act} > n_{max}$ " (BO: r2197.6).		
<b>Dependency:</b>	Refer to: r1084, r1087, r2197		
<b>Notice:</b>	For p0322 = 0, the following applies: $p2162 \leq 0.1 * p0311$ For p0322 > 0, the following applies: $p2162 \leq 1.02 * p0322 - p1082$ If one of the conditions is violated, p2162 is appropriately and automatically reduced when exiting the commissioning mode.		
<b>Note:</b>	For a negative speed limit (r1087) the hysteresis is effective below the limit value and for a positive speed limit (r1084) above the limit value. 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.		
<b>p2163[0...n]</b>	<b>Speed threshold 4 / <math>n_{thresh}</math> val 4</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8011
	<b>Min</b> 0.00 [rpm]	<b>Max</b> 210000.00 [rpm]	<b>Factory setting</b> 90.00 [rpm]
<b>Description:</b>	Sets the speed threshold value for the "speed setpoint - actual value deviation in tolerance $t_{off}$ " signal/message (BO: r2197.7).		
<b>Dependency:</b>	Refer to: p2164, p2166, r2197		
<b>p2164[0...n]</b>	<b>Hysteresis speed 4 / <math>n_{hysteresis}</math> 4</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8011
	<b>Min</b> 0.00 [rpm]	<b>Max</b> 200.00 [rpm]	<b>Factory setting</b> 2.00 [rpm]
<b>Description:</b>	Sets the hysteresis speed (bandwidth) for the "speed setpoint - actual value deviation in tolerance $t_{off}$ " signal/message (BO: r2197.7).		
<b>Dependency:</b>	Refer to: p2163, p2166, r2197		
<b>p2166[0...n]</b>	<b>Off delay <math>n_{act} = n_{set}</math> / <math>t_{del\_off}</math> <math>n_i = n_{so}</math></b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8011
	<b>Min</b> 0.0 [ms]	<b>Max</b> 10000.0 [ms]	<b>Factory setting</b> 200.0 [ms]
<b>Description:</b>	Sets the switch-off delay time for the "speed setpoint - actual value deviation in tolerance $t_{off}$ " signal/message (BO: r2197.7).		
<b>Dependency:</b>	Refer to: p2163, p2164, r2197		

<b>p2167[0...n]</b>	<b>Switch-on delay <math>n\_act = n\_set / t\_on</math> <math>n\_act=n\_set</math></b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8011
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0 [ms]	10000.0 [ms]	200.0 [ms]
<b>Description:</b>	Sets the switch-on delay for the "speed setpoint - actual value deviation in tolerance $t\_on$ " signal/message (BO: r2199.4).		
<b>r2169</b>	<b>CO: Actual speed smoothed signals / <math>n\_act</math> smth message</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8010
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [rpm]	- [rpm]	- [rpm]
<b>Description:</b>	Display and connector output of the smoothed speed actual value for messages.		
<b>Dependency:</b>	Refer to: p2153		
<b>p2170[0...n]</b>	<b>Current threshold value / <math>I\_thres</math></b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2002	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]
<b>Description:</b>	Sets the absolute current threshold for the messages. " $I\_act \geq I\_threshold$ p2170" (BO: r2197.8) " $I\_act < I\_threshold$ p2170" (BO: r2198.8)		
<b>Dependency:</b>	Refer to: p2171		
<b>p2171[0...n]</b>	<b>Current threshold value reached delay time / <math>I\_thresh</math> rch <math>t\_del</math></b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	10000 [ms]	10 [ms]
<b>Description:</b>	Sets the delay time for the comparison of the current actual value (r0068) with the current threshold value (p2170).		
<b>Dependency:</b>	Refer to: p2170		
<b>p2172[0...n]</b>	<b>DC link voltage threshold value / <math>Vdc</math> thresh val</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2001	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 5_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [V]	2000 [V]	800 [V]
<b>Description:</b>	Sets the DC link voltage threshold value for the following messages: " $Vdc\_act \leq Vdc\_threshold$ p2172" (BO: r2197.9) " $Vdc\_act > Vdc\_threshold$ p2172" (BO: r2197.10)		
<b>Dependency:</b>	Refer to: p2173		

## 2 Parameters

### 2.2 List of parameters

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<b>p2173[0...n]</b>	<b>DC link voltage comparison delay time / t_del Vdc</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	10000 [ms]	10 [ms]
<b>Description:</b>	Sets the delay time for the comparison of the DC link voltage r0070 with the threshold value p2172.		
<b>Dependency:</b>	Refer to: p2172		
<hr/>			
<b>p2174[0...n]</b>	<b>Torque threshold value 1 / M_thresh val 1</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8012
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Nm]	20000000.00 [Nm]	5.13 [Nm]
<b>Description:</b>	Sets the torque threshold value for the messages: "Torque setpoint < torque threshold value 1 and n_set reached" (BO: r2198.9) "Torque setpoint < torque threshold value 1" (BO: r2198.10) "Torque setpoint > torque threshold value 1" (BO: r2198.13)		
<b>Dependency:</b>	Refer to: p2195, r2198		
<hr/>			
<b>p2175[0...n]</b>	<b>Motor blocked speed threshold / Mot lock n_thresh</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8012
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	210000.00 [rpm]	120.00 [rpm]
<b>Description:</b>	Sets the speed threshold for the message "Motor blocked" (BO: r2198.6).		
<b>Dependency:</b>	Refer to: p0500, p2177, r2198		
<b>Note:</b>	The following applies for encoderless vector control for induction motors: At low speeds in open-loop speed controlled operation (see p1755, p1756), a blocked motor cannot be detected. The following applies for encoderless vector control for permanent magnet synchronous motors: At low speeds in open-loop speed controlled operation (see p1755, p1756), a blocked motor can only be detected if p2175 = p1755, and p1750.6 is set to 1.		
<hr/>			
<b>p2176[0...n]</b>	<b>Torque threshold value comparison delay time / M_thrsh comp T_del</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	10000 [ms]	200 [ms]
<b>Description:</b>	Sets the delay time for the comparison of the torque actual value (r0080) with torque threshold value 1 (p2174).		
<b>Dependency:</b>	Refer to: p2174		
<hr/>			
<b>p2177[0...n]</b>	<b>Motor blocked delay time / Mot lock t_del</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8012
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	65.000 [s]	3.000 [s]
<b>Description:</b>	Sets the delay time for the message "Motor blocked" (BO: r2198.6).		
<b>Dependency:</b>	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).

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<b>p2178[0...n]</b>	<b>Motor stalled delay time / Mot stall t<sub>del</sub></b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8012
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	10.000 [s]	0.010 [s]
<b>Description:</b>	Sets the delay time for the message "Motor stalled" (BO: r2198.7).		
<b>Dependency:</b>	Refer to: r2198		
<b>Note:</b>	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.		

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<b>p2179[0...n]</b>	<b>Output load identification current limit / Outp_Id iden I<sub>lim</sub></b>		
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2002	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 6_2	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Arms]	1000.00 [Arms]	0.00 [Arms]
<b>Description:</b>	Sets the current limit for output load identification. A missing output load is displayed using the "Output load not available" message (r2197.11 = 1). This message is output with a delay time (p2180).		
<b>Dependency:</b>	Refer to: p2180		
<b>Notice:</b>	For synchronous motors the output current can be almost zero under no load conditions.		
<b>Note:</b>	Missing output load is signaled in the following cases: - the motor is not connected. - a phase failure has occurred.		

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<b>p2180[0...n]</b>	<b>Output load detection delay time / Out_load det t<sub>del</sub></b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8020
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	10000 [ms]	2000 [ms]
<b>Description:</b>	Sets the delay time for the message "output load not available" (r2197.11 = 1).		
<b>Dependency:</b>	Refer to: p2179		

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<b>p2181[0...n]</b>	<b>Load monitoring response / Load monit resp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8013
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	6	0
<b>Description:</b>	Sets the response when evaluating the load monitoring.		
<b>Value:</b>	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		

## 2 Parameters

### 2.2 List of parameters

5: F07924 for torque/speed too high

6: F07925 for torque/speed out of tolerance

**Dependency:**

Refer to: p2182, p2183, p2184, p2185, p2186, p2187, p2188, p2189, p2190, p2192, p2193, r2198, p3230, p3231

**Note:**

The response to the faults F07923 ... F07925 can be set.

This parameter setting has no effect on the production of fault F07936.

---

#### p2182[0...n]

#### Load monitoring speed threshold value 1 / n\_thresh 1

**Access level:** 3

**Calculated:** -

**Data type:** FloatingPoint32

**Can be changed:** U, T

**Scaling:** -

**Dyn. index:** DDS, p0180

**Units group:** 3\_1

**Unit selection:** p0505

**Func. diagram:** 8013

**Min**

**Max**

**Factory setting**

0.00 [rpm]

210000.00 [rpm]

150.00 [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) --> p2185 (M\_threshold 1, upper), p2186 (M\_threshold 1, lower)

p2183 (n\_threshold 2) --> p2187 (M\_threshold 2, upper), p2188 (M\_threshold 2, lower)

p2184 (n\_threshold 3) --> p2189 (M\_threshold 3, upper), p2190 (M\_threshold 3, lower)

**Dependency:**

The following applies: p2182 < p2183 < p2184

Refer to: p2183, p2184, p2185, p2186

**Note:**

In order that the load monitoring can reliably respond, the speed threshold p2182 should always be set lower than the minimum motor speed to be monitored.

---

#### p2183[0...n]

#### Load monitoring speed threshold value 2 / n\_thresh 2

**Access level:** 3

**Calculated:** -

**Data type:** FloatingPoint32

**Can be changed:** U, T

**Scaling:** -

**Dyn. index:** DDS, p0180

**Units group:** 3\_1

**Unit selection:** p0505

**Func. diagram:** 8013

**Min**

**Max**

**Factory setting**

0.00 [rpm]

210000.00 [rpm]

900.00 [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) --> 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, p2184, p2187, p2188

---

#### 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:** -

**Dyn. index:** DDS, p0180

**Units group:** 3\_1

**Unit selection:** p0505

**Func. diagram:** 8013

**Min**

**Max**

**Factory setting**

0.00 [rpm]

210000.00 [rpm]

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) --> 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, p2189, p2190

**Note:**

In order that the load monitoring can reliably respond, the speed threshold p2184 should always be set higher than the maximum motor speed to be monitored.

<b>p2185[0...n]</b>	<b>Load monitoring torque threshold 1 upper / M_thresh 1 upper</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8013
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Nm]	20000000.00 [Nm]	10000000.00 [Nm]
<b>Description:</b>	Sets the speed/torque envelope curve for load monitoring.		
<b>Dependency:</b>	The following applies: p2185 > p2186 Refer to: p2182, p2186		
<b>Note:</b>	The upper envelope curve is defined by p2185, p2187 and p2189.		
<b>p2186[0...n]</b>	<b>Load monitoring torque threshold 1 lower / M_thresh 1 lower</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8013
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]
<b>Description:</b>	Sets the speed/torque envelope curve for load monitoring.		
<b>Dependency:</b>	The following applies: p2186 < p2185 Refer to: p2182, p2185		
<b>Note:</b>	The lower envelope curve is defined by p2186, p2188 and p2190.		
<b>p2187[0...n]</b>	<b>Load monitoring torque threshold 2 upper / M_thresh 2 upper</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8013
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Nm]	20000000.00 [Nm]	10000000.00 [Nm]
<b>Description:</b>	Sets the speed/torque envelope curve for load monitoring.		
<b>Dependency:</b>	The following applies: p2187 > p2188 Refer to: p2183, p2188		
<b>Note:</b>	The upper envelope curve is defined by p2185, p2187 and p2189.		
<b>p2188[0...n]</b>	<b>Load monitoring torque threshold 2 lower / M_thresh 2 lower</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8013
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]
<b>Description:</b>	Sets the speed/torque envelope curve for load monitoring.		
<b>Dependency:</b>	The following applies: p2188 < p2187 Refer to: p2183, p2187		
<b>Note:</b>	The lower envelope curve is defined by p2186, p2188 and p2190.		
<b>p2189[0...n]</b>	<b>Load monitoring torque threshold 3 upper / M_thresh 3 upper</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8013
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [Nm]	20000000.00 [Nm]	10000000.00 [Nm]
<b>Description:</b>	Sets the speed/torque envelope curve for load monitoring.		

## 2 Parameters

### 2.2 List of parameters

**Dependency:** The following applies: p2189 > p2190  
Refer to: p2184, p2190

**Note:** The upper envelope curve is defined by p2185, p2187 and p2189.

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<b>p2190[0...n]</b>	<b>Load monitoring torque threshold 3 lower / M_thresh 3 lower</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> 7_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8013	
<b>Min</b> 0.00 [Nm]	<b>Max</b> 20000000.00 [Nm]	<b>Factory setting</b> 0.00 [Nm]	

**Description:** Sets the speed/torque envelope curve for load monitoring.

**Dependency:** The following applies: p2190 < p2189  
Refer to: p2184, p2189

**Note:** The lower envelope curve is defined by p2186, p2188 and p2190.

---

<b>p2192[0...n]</b>	<b>Load monitoring delay time / Load monit t_del</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8013	
<b>Min</b> 0.00 [s]	<b>Max</b> 65.00 [s]	<b>Factory setting</b> 10.00 [s]	

**Description:** Sets the delay time to evaluate the load monitoring.

---

<b>p2193[0...n]</b>	<b>Load monitoring configuration / Load monit config</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8013	
<b>Min</b> 0	<b>Max</b> 3	<b>Factory setting</b> 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, p2189, p2190, p2192, r2198, p3230, p3231, p3232

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<b>p2194[0...n]</b>	<b>Torque threshold value 2 / M_thresh val 2</b>		
<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1,3,5	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8012	
<b>Min</b> 0.00 [%]	<b>Max</b> 100.00 [%]	<b>Factory setting</b> 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



<b>p2195[0...n]</b>	<b>Torque utilization switch-off delay / M_util t_off</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8012
	<b>Min</b> 0.0 [ms]	<b>Max</b> 1000.0 [ms]	<b>Factory setting</b> 800.0 [ms]
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p2174, p2194		

<b>p2196[0...n]</b>	<b>Torque utilization scaling / M_util scal</b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> C(1, 3), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b> 0.00 [%]	<b>Max</b> 1000.00 [%]	<b>Factory setting</b> 100.00 [%]
<b>Description:</b>	Sets the scaling factor for torque utilization (r0033).		

<b>r2197.0...13</b>	<b>CO/BO: Status word monitoring 1 / ZSW monitor 1</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2534		
	<b>Min</b> -	<b>Max</b> -	<b>Factory setting</b> -		
<b>Description:</b>	Display and BICO output for the first status word of the monitoring functions.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	n_act  <= n_min p1080	Yes	No	8020
	01	n_act  <= speed threshold value 2 p2155	Yes	No	8010
	02	n_act  > speed threshold value 2 p2155	Yes	No	8010
	03	n_act >= 0	Yes	No	8011
	04	n_act  >= n_set	Yes	No	8020
	05	n_act  <= n_standstill p1226	Yes	No	8020
	06	n_act  > n_max	Yes	No	8010
	07	Speed setp - act val deviation in tolerance t_off	Yes	No	8011
	08	I_act >= I_threshold value p2170	Yes	No	8020
	09	Vdc_act <= Vdc_threshold value p2172	Yes	No	8020
	10	Vdc_act > Vdc_threshold value p2172	Yes	No	8020
	11	Output load is not present	Yes	No	8020
	12	n_act  > n_max (delayed)	Yes	No	8021
	13	n_act  > n_max (F07901)	Yes	No	-

**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.

## 2 Parameters

### 2.2 List of parameters

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

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2536
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

#### Description:

Display and BICO output for the second status word of the monitoring functions.

#### Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	n_act  <= speed threshold value 5	Yes	No	8021
01	n_act  > speed threshold value 5	Yes	No	8021
02	n_act  <= speed threshold value 6	Yes	No	8021
03	n_act  > speed threshold value 6	Yes	No	8021
04	n_set  < p2161	Yes	No	8011
05	n_set > 0	Yes	No	8011
06	Motor blocked	Yes	No	8012
07	Motor stalled	Yes	No	8012
08	I_act  < I_threshold value p2170	Yes	No	8020
09	M_act  > torque threshold value 1 and n_set reached	Yes	No	8021
10	M_set  < torque threshold value 1	Yes	No	8012
11	Load monitoring signals an alarm	Yes	No	8013
12	Load monitoring signals a fault condition	Yes	No	8013
13	M_act  > torque threshold value 1	Yes	No	8021

#### 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

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2537
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

#### Description:

Display and BICO output for the third status word of the monitoring functions.

#### Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	n_act  < speed threshold value 3	Yes	No	8010
01	f or n comparison value reached or exceeded	Yes	No	8010

04	Speed setp - act val deviation in tolerance t_on	Yes	No	8011
05	Ramp-up/ramp-down completed	Yes	No	8011
11	Torque utilization < torque threshold value 2	Yes	No	8012

**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**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	0

**Description:**Sets the signal source to switch in/switch out the technology controller.  
The technology controller is switched in with a 1 signal.**p2201[0...n]****CO: Technology controller fixed value 1 / Tec\_ctrl fix val1**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950, 7951
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-200.00 [%]	200.00 [%]	10.00 [%]

**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**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950, 7951
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-200.00 [%]	200.00 [%]	20.00 [%]

**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**

<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950, 7951
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-200.00 [%]	200.00 [%]	30.00 [%]

**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.

<b>p2204[0...n]</b>	<b>CO: Technology controller fixed value 4 / Tec_ctr fix val 4</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950, 7951
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	40.00 [%]
<b>Description:</b>	Sets the value for fixed value 4 of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222, p2223, r2224, r2229		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p2205[0...n]</b>	<b>CO: Technology controller fixed value 5 / Tec_ctr fix val 5</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	50.00 [%]
<b>Description:</b>	Sets the value for fixed value 5 of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222, p2223, r2224, r2229		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p2206[0...n]</b>	<b>CO: Technology controller fixed value 6 / Tec_ctr fix val 6</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	60.00 [%]
<b>Description:</b>	Sets the value for fixed value 6 of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222, p2223, r2224, r2229		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p2207[0...n]</b>	<b>CO: Technology controller fixed value 7 / Tec_ctr fix val 7</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	70.00 [%]
<b>Description:</b>	Sets the value for fixed value 7 of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222, p2223, r2224, r2229		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p2208[0...n]</b>	<b>CO: Technology controller fixed value 8 / Tec_ctr fix val 8</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	80.00 [%]
<b>Description:</b>	Sets the value for fixed value 8 of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222, p2223, r2224, r2229		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		

<b>p2209[0...n]</b>	<b>CO: Technology controller fixed value 9 / Tec_ctr fix val 9</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	90.00 [%]
<b>Description:</b>	Sets the value for fixed value 9 of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222, p2223, r2224, r2229		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p2210[0...n]</b>	<b>CO: Technology controller fixed value 10 / Tec_ctr fix val 10</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	100.00 [%]
<b>Description:</b>	Sets the value for fixed value 10 of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222, p2223, r2224, r2229		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p2211[0...n]</b>	<b>CO: Technology controller fixed value 11 / Tec_ctr fix val 11</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	110.00 [%]
<b>Description:</b>	Sets the value for fixed value 11 of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222, p2223, r2224, r2229		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p2212[0...n]</b>	<b>CO: Technology controller fixed value 12 / Tec_ctr fix val 12</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	120.00 [%]
<b>Description:</b>	Sets the value for fixed value 12 of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222, p2223, r2224, r2229		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>p2213[0...n]</b>	<b>CO: Technology controller fixed value 13 / Tec_ctr fix val 13</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	130.00 [%]
<b>Description:</b>	Sets the value for fixed value 13 of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222, p2223, r2224, r2229		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		

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<b>p2214[0...n]</b>	<b>CO: Technology controller fixed value 14 / Tec_ctr fix val 14</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	140.00 [%]
<b>Description:</b>	Sets the value for fixed value 14 of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222, p2223, r2224, r2229		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		

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<b>p2215[0...n]</b>	<b>CO: Technology controller fixed value 15 / Tec_ctr fix val 15</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	150.00 [%]
<b>Description:</b>	Sets the value for fixed value 15 of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222, p2223, r2224, r2229		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		

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<b>p2216[0...n]</b>	<b>Technology controller fixed value selection method / Tec_ctr FixVal sel</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7950, 7951
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	2	1
<b>Description:</b>	Sets the method to select the fixed setpoints.		
<b>Value:</b>	1: Direct selection 2: Binary selection		

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<b>p2220[0...n]</b>	<b>BI: Technology controller fixed value selection bit 0 / Tec_ctrl sel bit 0</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7950, 7951
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source to select a fixed value of the technology controller.		
<b>Dependency:</b>	Refer to: p2221, p2222, p2223		

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<b>p2221[0...n]</b>	<b>BI: Technology controller fixed value selection bit 1 / Tec_ctrl sel bit 1</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7950, 7951
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source to select a fixed value of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2222, p2223		

<b>p2222[0...n]</b>	<b>BI: Technology controller fixed value selection bit 2 / Tec_ctrl sel bit 2</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary	
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7950, 7951	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	0	
<b>Description:</b>	Sets the signal source to select a fixed value of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2223		

<b>p2223[0...n]</b>	<b>BI: Technology controller fixed value selection bit 3 / Tec_ctrl sel bit 3</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary	
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7950, 7951	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	0	
<b>Description:</b>	Sets the signal source to select a fixed value of the technology controller.		
<b>Dependency:</b>	Refer to: p2220, p2221, p2222		

<b>r2224</b>	<b>CO: Technology controller fixed value effective / Tec_ctr FixVal eff</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -	
<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7950, 7951	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [%]	- [%]	- [%]	
<b>Description:</b>	Display and connector output for the selected and active fixed value of the technology controller.		
<b>Dependency:</b>	Refer to: r2229		

<b>r2225.0</b>	<b>CO/BO: Technology controller fixed value selection status word / Tec_ctr FixVal ZSW</b>			
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
-	-	-		
<b>Description:</b>	Display and BICO output for the status word of the fixed value selection of the technology controller.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	Technology controller fixed value selected	Yes	No
				<b>FP</b> 7950, 7951

<b>r2229</b>	<b>Technology controller number actual / Tec_ctrl No. act</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7950	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	
<b>Description:</b>	Displays the number of the selected fixed setpoint of the technology controller.		
<b>Dependency:</b>	Refer to: r2224		

<b>p2230[0...n]</b>	<b>Technology controller motorized potentiometer configuration / Tec_ctr mop config</b>			
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32	
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7954	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	0000 0100 bin	
<b>Description:</b>	Sets the configuration for the motorized potentiometer of the technology controller.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	Data save active	Yes	No
	02	Initial rounding-off active	Yes	No
	03	Non-volatile data save active for p2230.0 = 1	Yes	No
	04	Ramp-function generator always active	Yes	No
<b>Dependency:</b>	Refer to: r2231, p2240			
<b>Notice:</b>	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.			
<b>Note:</b>	<p>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.</p> <p>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: <math>r = 0.0001 \times \max(p2237,  p2238 ) [\%] / 0.13^2 [s^2]</math> The jerk is effective until the maximum acceleration is reached (<math>a_{max} = p2237 [\%] / p2247 [s]</math> or <math>a_{max} = p2238 [\%] / p2248 [s]</math>), 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.</p> <p>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).</p> <p>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.</p>			

<b>r2231</b>	<b>Technology controller motorized potentiometer setpoint memory / Tec_ctrl mop mem</b>			
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7954	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	- [%]	- [%]	- [%]	
<b>Description:</b>	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.			
<b>Dependency:</b>	Refer to: p2230			



<b>p2235[0...n]</b>	<b>BI: Technology controller motorized potentiometer raise setpoint / Tec_ctrl mop raise</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7954
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source to continually increase the setpoint for the motorized potentiometer of the technology controller. The setpoint change (CO: r2250) depends on the set ramp-up time (p2247) and the duration of the signal that is present (BI: p2235).		
<b>Dependency:</b>	Refer to: p2236		
<b>p2236[0...n]</b>	<b>BI: Technology controller motorized potentiometer lower setpoint / Tec_ctrl mop lower</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7954
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	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).		
<b>Dependency:</b>	Refer to: p2235		
<b>p2237[0...n]</b>	<b>Technology controller motorized potentiometer maximum value / Tec_ctrl mop max</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7954
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	100.00 [%]
<b>Description:</b>	Sets the maximum value for the motorized potentiometer of the technology controller.		
<b>Dependency:</b>	Refer to: p2238		
<b>p2238[0...n]</b>	<b>Technology controller motorized potentiometer minimum value / Tec_ctrl mop min</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7954
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	-100.00 [%]
<b>Description:</b>	Sets the minimum value for the motorized potentiometer of the technology controller.		
<b>Dependency:</b>	Refer to: p2237		
<b>p2240[0...n]</b>	<b>Technology controller motorized potentiometer starting value / Tec_ctrl mop start</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7954
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	0.00 [%]
<b>Description:</b>	Sets the starting value for the motorized potentiometer of the technology controller. For p2230.0 = 0, this setpoint is entered after ON.		
<b>Dependency:</b>	Refer to: p2230		

<b>r2245</b>	<b>CO: Technology controller mot. potentiometer setpoint before RFG / Tec_ctr mop befRFG</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7954
	<b>Min</b> - [%]	<b>Max</b> - [%]	<b>Factory setting</b> - [%]
<b>Description:</b>	Sets the effective setpoint in front of the internal motorized potentiometer ramp-function generator of the technology controller.		
<b>Dependency:</b>	Refer to: r2250		
<b>p2247[0...n]</b>	<b>Technology controller motorized potentiometer ramp-up time / Tec_ctr mop t_r-up</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7954
	<b>Min</b> 0.0 [s]	<b>Max</b> 1000.0 [s]	<b>Factory setting</b> 10.0 [s]
<b>Description:</b>	Sets the ramp-up time for the internal ramp-function generator for the motorized potentiometer of the technology controller.		
<b>Dependency:</b>	Refer to: p2248		
<b>Note:</b>	The time is referred to 100 %. When the initial rounding-off is activated (p2230.2 = 1) the ramp-up is correspondingly extended.		
<b>p2248[0...n]</b>	<b>Technology controller motorized potentiometer ramp-down time / Tec_ctrMop t_rdown</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7954
	<b>Min</b> 0.0 [s]	<b>Max</b> 1000.0 [s]	<b>Factory setting</b> 10.0 [s]
<b>Description:</b>	Sets the ramp-down time for the internal ramp-function generator for the motorized potentiometer of the technology controller.		
<b>Dependency:</b>	Refer to: p2247		
<b>Note:</b>	The time is referred to 100 %. When the initial rounding-off is activated (p2230.2 = 1) the ramp-down is correspondingly extended.		
<b>r2250</b>	<b>CO: Technology controller motorized potentiometer setpoint after RFG / Tec_ctr mop aftRFG</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7954
	<b>Min</b> - [%]	<b>Max</b> - [%]	<b>Factory setting</b> - [%]
<b>Description:</b>	Displays the effective setpoint after the internal ramp-function generator for the motorized potentiometer of the technology controller.		
<b>Dependency:</b>	Refer to: r2245		

<b>p2251</b>	<b>Technology controller mode / Tec_ctrl mode</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	Sets the mode for using the technology controller output.		
<b>Value:</b>	0: Technology controller as main speed setpoint 1: Technology controller as supplementary speed setpoint		
<b>Dependency:</b>	p2251 = 0, 1 is only effective if the enable signal of the technology controller is interconnected (p2200 > 0).		
<b>p2253[0...n]</b>	<b>CI: Technology controller setpoint 1 / Tec_ctrl setp 1</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the setpoint 1 of the technology controller.		
<b>Dependency:</b>	Refer to: p2254, p2255		
<b>p2254[0...n]</b>	<b>CI: Technology controller setpoint 2 / Tec_ctrl setp 2</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the setpoint 2 of the technology controller.		
<b>Dependency:</b>	Refer to: p2253, p2256		
<b>p2255</b>	<b>Technology controller setpoint 1 scaling / Tec_ctrl set1 scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [%]	100.00 [%]	100.00 [%]
<b>Description:</b>	Sets the scaling for the setpoint 1 of the technology controller.		
<b>Dependency:</b>	Refer to: p2253		
<b>p2256</b>	<b>Technology controller setpoint 2 scaling / Tec_ctrl set2 scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [%]	100.00 [%]	100.00 [%]
<b>Description:</b>	Sets the scaling for the setpoint 2 of the technology controller.		
<b>Dependency:</b>	Refer to: p2254		

<b>p2257</b>	<b>Technology controller ramp-up time / Tec_ctrl t_ramp-up</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [s]	650.00 [s]	1.00 [s]
<b>Description:</b>	Sets the ramp-up time of the technology controller.		
<b>Dependency:</b>	Refer to: p2258		
<b>Note:</b>	The ramp-up time is referred to 100 %.		
<b>p2258</b>	<b>Technology controller ramp-down time / Tec_ctrl t_ramp-dn</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [s]	650.00 [s]	1.00 [s]
<b>Description:</b>	Sets the ramp-down time of the technology controller.		
<b>Dependency:</b>	Refer to: p2257		
<b>Note:</b>	The ramp-down time is referred to 100 %.		
<b>r2260</b>	<b>CO: Technology controller setpoint after ramp-function generator / Tec_ctr set aftRFG</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Sets the setpoint after the ramp-function generator of the technology controller.		
<b>p2261</b>	<b>Technology controller setpoint filter time constant / Tec_ctrl set T</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	60.000 [s]	0.000 [s]
<b>Description:</b>	Sets the time constant for the setpoint filter (PT1) of the technology controller.		
<b>r2262</b>	<b>CO: Technology controller setpoint after filter / Tec_ctr set aftFit</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Display and connector output for the smoothed setpoint after the setpoint filter (PT1) of the technology controller.		
<b>p2263</b>	<b>Technology controller type / Tec_ctrl type</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	Sets the type of technology controller.		

**Value:** 0: D component in the actual value signal  
1: D component in the fault signal

---

<b>p2264[0...n]</b>	<b>CI: Technology controller actual value / Tec_ctrl act val</b>
<b>Access level:</b> 2	<b>Calculated:</b> -
<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT
<b>Units group:</b> -	<b>Unit selection:</b> -
<b>Min</b>	<b>Max</b>
-	-
	<b>Data type:</b> U32 / FloatingPoint32
	<b>Dyn. index:</b> CDS, p0170
	<b>Func. diagram:</b> 7958
	<b>Factory setting</b>
	0

**Description:** Sets the signal source for the actual value of the technology controller.

---

<b>p2265</b>	<b>Technology controller actual value filter time constant / Tec_ctrl act T</b>
<b>Access level:</b> 2	<b>Calculated:</b> -
<b>Can be changed:</b> U, T	<b>Scaling:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -
<b>Min</b>	<b>Max</b>
0.000 [s]	60.000 [s]
	<b>Data type:</b> FloatingPoint32
	<b>Dyn. index:</b> -
	<b>Func. diagram:</b> 7958
	<b>Factory setting</b>
	0.000 [s]

**Description:** Sets the time constant for the actual value filter (PT1) of the technology controller.

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<b>r2266</b>	<b>CO: Technology controller actual value after filter / Tec_ctr act aftFlt</b>
<b>Access level:</b> 3	<b>Calculated:</b> -
<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT
<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595
<b>Min</b>	<b>Max</b>
- [%]	- [%]
	<b>Data type:</b> FloatingPoint32
	<b>Dyn. index:</b> -
	<b>Func. diagram:</b> 7958
	<b>Factory setting</b>
	- [%]

**Description:** Display and connector output for the smoothed actual value after the filter (PT1) of the technology controller.

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<b>p2267</b>	<b>Technology controller upper limit actual value / Tec_ctrl u_lim act</b>
<b>Access level:</b> 3	<b>Calculated:</b> -
<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT
<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595
<b>Min</b>	<b>Max</b>
-200.00 [%]	200.00 [%]
	<b>Data type:</b> FloatingPoint32
	<b>Dyn. index:</b> -
	<b>Func. diagram:</b> 7958
	<b>Factory setting</b>
	100.00 [%]

**Description:** Sets the upper limit for the actual value signal of the technology controller.

**Dependency:** Refer to: p2264, p2265, p2271

**Notice:** If the actual value exceeds this upper limit, this results in fault F07426.


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<b>p2268</b>	<b>Technology controller lower limit actual value / Tec_ctrl l_lim act</b>
<b>Access level:</b> 3	<b>Calculated:</b> -
<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT
<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595
<b>Min</b>	<b>Max</b>
-200.00 [%]	200.00 [%]
	<b>Data type:</b> FloatingPoint32
	<b>Dyn. index:</b> -
	<b>Func. diagram:</b> 7958
	<b>Factory setting</b>
	-100.00 [%]

**Description:** Sets the lower limit for the actual value signal of the technology controller.

**Dependency:** Refer to: p2264, p2265, p2271

**Notice:** If the actual value falls below this lower limit, this results in fault F07426.

<b>p2269</b>	<b>Technology controller gain actual value / Tech_ctrl gain act</b>	
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.00 [%]	500.00 [%]	100.00 [%]
<b>Description:</b>	Sets the scaling factor for the actual value of the technology controller.	
<b>Dependency:</b>	Refer to: p2264, p2265, p2267, p2268, p2271	
<b>Note:</b>	For 100%, the actual value is not changed.	
<b>p2270</b>	<b>Technology controller actual value function / Tec_ctr ActVal fct</b>	
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	3	0
<b>Description:</b>	Setting to use an arithmetic function for the actual value signal of the technology controller.	
<b>Value:</b>	0: No function 1: Root function (root from x) 2: Square function (x * x) 3: Cube function (x * x * x)	
<b>Dependency:</b>	Refer to: p2264, p2265, p2267, p2268, p2269, p2271	
<b>p2271</b>	<b>Technology controller actual value inversion (sensor type) / Tech_ctrl act inv</b>	
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	1	0
<b>Description:</b>	Setting to invert the actual value signal of the technology controller. The inversion depends on the sensor type for the actual value signal.	
<b>Value:</b>	0: No inversion 1: Inversion actual value signal	
<b>Caution:</b>	If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!	
		
<b>Note:</b>	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).	
<b>r2272</b>	<b>CO: Technology controller actual value scaled / Tech_ctrl act scal</b>	
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7958
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [%]	- [%]	- [%]
<b>Description:</b>	Display and connector output for the scaled actual value signal of the technology controller.	
<b>Dependency:</b>	Refer to: p2264, p2265, r2266, p2267, p2268, p2269, p2270, p2271	

<b>r2273</b>	<b>CO: Technology controller error / Tec_ctrl error</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> 9_1	<b>Unit selection:</b> p0595	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Displays the error (system deviation) between the setpoint and actual value of the technology controller.		
<b>Dependency:</b>	Refer to: p2263		
<b>p2274</b>	<b>Technology controller differentiation time constant / Tec_ctrl D comp T</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	60.000 [s]	0.000 [s]
<b>Description:</b>	Sets the time constant for the differentiation (D component) of the technology controller.		
<b>Note:</b>	p2274 = 0: Differentiation is disabled.		
<b>p2280</b>	<b>Technology controller proportional gain / Tec_ctrl Kp</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000	1000.000	1.000
<b>Description:</b>	Sets the proportional gain (P component) of the technology controller.		
<b>Note:</b>	p2280 = 0: The proportional gain is disabled.		
<b>p2285</b>	<b>Technology controller integral time / Tec_ctrl Tn</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.000 [s]	10000.000 [s]	30.000 [s]
<b>Description:</b>	Sets the integral time (I component, integrating time constant) of the technology controller.		
<b>Notice:</b>	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).		
<b>Note:</b>	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.		
<b>p2286[0...n]</b>	<b>BI: Hold technology controller integrator / Tec_ctr integ hold</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	56.13
<b>Description:</b>	Sets the signal source to hold the integrator for the technology controller.		

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<b>p2289[0...n]</b>	<b>CI: Technology controller pre-control signal / Tec_ctr prectr_sig</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**Description:** Sets the signal source for the pre-control signal of the technology controller.

---

<b>p2291</b>	<b>CO: Technology controller maximum limiting / Tec_ctrl max_lim</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	100.00 [%]

**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).




---

<b>p2292</b>	<b>CO: Technology controller minimum limiting / Tec_ctrl min_lim</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-200.00 [%]	200.00 [%]	0.00 [%]

**Description:** Sets the minimum limit of the technology controller.

**Dependency:** Refer to: p2291

**Caution:** The maximum limit must always be greater than the minimum limit (p2291 > p2292).




---

<b>p2293</b>	<b>Technology controller ramp-up/ramp-down time / Tec_ctr t_RU/RD</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [s]	100.00 [s]	1.00 [s]

**Description:** Sets the ramping time for the output signal of the technology controller.

**Dependency:** Refer to: p2291, p2292

**Note:** The time refers to the set maximum and minimum limits (p2291, p2292).

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<b>r2294</b>	<b>CO: Technology controller output signal / Tec_ctrl outp_sig</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]


**Description:** Display and connector output for the output signal of the technology controller.

**Dependency:** Refer to: p2295



<b>p2295</b>	<b>CO: Technology controller output scaling / Tec_ctrl outp scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-100.00 [%]	100.00 [%]	100.00 [%]
<b>Description:</b>	Sets the scaling for the output signal of the technology controller.		
<b>p2296[0...n]</b>	<b>CI: Technology controller output scaling / Tec_ctrl outp scal</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	2295[0]
<b>Description:</b>	Sets the signal source for the scaling value of the technology controller.		
<b>Dependency:</b>	Refer to: p2295		
<b>p2297[0...n]</b>	<b>CI: Technology controller maximum limit signal source / Tec_ctrMaxLimS_src</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1084[0]
<b>Description:</b>	Sets the signal source for the maximum limiting of the technology controller.		
<b>Dependency:</b>	Refer to: p2291		
<b>Note:</b>	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.		
<b>p2298[0...n]</b>	<b>CI: Technology controller minimum limit signal source / Tec_ctrl min_l s_s</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1087[0]
<b>Description:</b>	Sets the signal source for the minimum limiting of the technology controller.		
<b>Dependency:</b>	Refer to: p2292		
<b>Note:</b>	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.		
<b>p2299[0...n]</b>	<b>CI: Technology controller limit offset / Tech_ctrl lim offs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the offset of the output limiting of the technology controller.		
<b>Note:</b>	In mode p2251 = 1, p2299 must be connected to the output of ramp-function generator r1150 so that the technology controller stops when the speed limits are reached (see also p2297, p2298).		

<b>p2302</b>	<b>Technology controller output signal starting value / Tec_ctr start val</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [%]	200.00 [%]	0.00 [%]
<b>Description:</b>	Sets the start value for the output of the technology controller. If the drive is switched on and the technology controller is already enabled (see p2200, r0056.3), then its output signal r2294 first goes to the start value p2302, before the controller starts to operate.		
<b>Dependency:</b>	The starting value is only effective in the mode "technology controller as main speed setpoint" (p2251 = 0). If the technology controller is first enabled when the drive is switched on, a start speed remains ineffective, and the controller output starts with the actual setpoint speed of the ramp-function generator.		
<b>Note:</b>	If the technology controller operates on the speed/setpoint channel (p2251 = 0), then the starting value is interpreted as the starting speed and when operation is enabled, is connected to the output of the technology controller (r2294). 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.		

<b>p2306</b>	<b>Technology controller fault signal inversion / Tec_ctrl fault inv</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	Setting to invert the fault signal of the technology controller. The setting depends on the type of control loop.		
<b>Value:</b>	0: No inversion 1: Inversion		
<b>Caution:</b>	If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!		
			
<b>Note:</b>	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).		

<b>r2344</b>	<b>CO: Technology controller last speed setpoint (smoothed) / Tec_ctrl n_setp_sm</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Displays the smoothed speed setpoint of the technology controller prior to switching to operation with fault response (see p2345).		
<b>Dependency:</b>	Refer to: p2345		
<b>Note:</b>	Smoothing time = 10 s		

<b>p2345</b>		<b>Technology controller fault response / Tech_ctrl flt resp</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0	2	0	
<b>Description:</b>	Sets the response of the technology controller to the occurrence of fault F07426 (technology controller actual value limited).			
	The fault response is executed if status bit 8 or 9 in the technology controller status word r2349 is set. If both status bits are zero, a switch back to technology controller operation will follow.			
<b>Value:</b>	0: Function inhibited 1: On fault: Changeover to r2344 (or p2302) 2: On fault: Changeover to p2215			
<b>Dependency:</b>	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			
<b>Notice:</b>	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 different fault response or a different fixed setpoint 15 for the fault response p2345 = 2 should be selected.			
<b>Note:</b>	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).			

<b>r2349.0...12</b>		<b>CO/BO: Technology controller status word / Tec_ctrl status</b>			
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7958		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the status word of the technology controller.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	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	-

<b>p2900[0...n]</b>	<b>CO: Fixed value 1 [%] / Fixed value 1 [%]</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 1021
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-10000.00 [%]	10000.00 [%]	0.00 [%]
<b>Description:</b>	Setting and connector output for a fixed percentage value.		
<b>Dependency:</b>	Refer to: p2901, r2902, p2930		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>Note:</b>	The value can be used to interconnect a scaling function (e.g. scaling of the main setpoint)		
<b>p2901[0...n]</b>	<b>CO: Fixed value 2 [%] / Fixed value 2 [%]</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 1021
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-10000.00 [%]	10000.00 [%]	0.00 [%]
<b>Description:</b>	Setting and connector output for a fixed percentage value.		
<b>Dependency:</b>	Refer to: p2900, p2930		
<b>Notice:</b>	A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.		
<b>Note:</b>	The value can be used to interconnect a scaling function (e.g. scaling of the supplementary setpoint)		
<b>r2902[0...14]</b>	<b>CO: Fixed values [%] / Fixed values [%]</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 1021
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Display and connector output for frequently used percentage values.		
<b>Index:</b>	[0] = Fixed value +0 % [1] = Fixed value +5 % [2] = Fixed value +10 % [3] = Fixed value +20 % [4] = Fixed value +50 % [5] = Fixed value +100 % [6] = Fixed value +150 % [7] = Fixed value +200 % [8] = Fixed value -5 % [9] = Fixed value -10 % [10] = Fixed value -20 % [11] = Fixed value -50 % [12] = Fixed value -100 % [13] = Fixed value -150 % [14] = Fixed value -200 %		
<b>Dependency:</b>	Refer to: p2900, p2901, p2930		
<b>Note:</b>	The signal sources can, for example, be used to interconnect scalings.		
<b>p2930[0...n]</b>	<b>CO: Fixed value M [Nm] / Fixed value M [Nm]</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> p2003	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 1021
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-100000.00 [Nm]	100000.00 [Nm]	0.00 [Nm]
<b>Description:</b>	Setting and connector output for a fixed torque value.		
<b>Dependency:</b>	Refer to: p2900, p2901, r2902		

**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, for example, be used to interconnect a supplementary torque.

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<b>r2969[0...6]</b>	<b>Direct axis flux model display / Mot Psid trace</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Display of the direct axis flux model of the closed-loop controlled reluctance motor for diagnostic purposes:

Display of the entered direct axis current id:

idx0: current in Arms

Display of the saturation curves of the direct axis flux psid(id, iq):

idx1: flux in Vs rms with respect to the direct axis current for iq = 0

idx2: flux in Vs rms with respect to the direct axis current for iq = 0.5 \* p2950

idx3: flux in Vs rms with respect to the direct axis current for iq = p2950

Displays the relative error of the current inversion(id(psid, iq) - id) / p2950:

idx4: error with respect to direct axis current for iq = 0

idx5: error with respect to direct axis current for iq = 0.5 \* p2950

idx6: error with respect to direct axis current for iq = p2950

**Index:**  
 [0] = d-current  
 [1] = d-flux iq0  
 [2] = d-flux iq1  
 [3] = d-flux iq2  
 [4] = d-current error iq0  
 [5] = d-current error iq1  
 [6] = d-current error iq2

**Note:** The display is only generated when the pulses are inhibited.

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<b>p3110</b>	<b>External fault 3 power-up delay / Ext fault 3 t_on</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2546
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	1000 [ms]	0 [ms]

**Description:** Sets the delay time for external fault 3.

**Dependency:** Refer to: p2108, p3111, p3112

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<b>p3111[0...n]</b>	<b>BI: External fault 3 enable / Ext fault 3 enab</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	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

<b>p3112[0...n]</b>	<b>BI: External fault 3 enable negated / Ext flt 3 enab neg</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary		
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0		
<b>Description:</b>	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				
<b>Dependency:</b>	Refer to: p2108, p3110, p3111				
<b>r3113.0...15</b>	<b>CO/BO: NAMUR message bit bar / NAMUR bit bar</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Display and BICO output for the status of the NAMUR message bit bar. The faults and alarms are assigned to the appropriate signaling/message classes and influence a specific message bit.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Fault converter information electronics/software error	Yes	No	-
	01	Network fault	Yes	No	-
	02	DC link overvoltage	Yes	No	-
	03	Fault drive converter power electronics	Yes	No	-
	04	Drive converter overtemperature	Yes	No	-
	05	Ground fault	Yes	No	-
	06	Motor overload	Yes	No	-
	07	Bus error	Yes	No	-
	08	External safety-relevant shutdown	Yes	No	-
	10	Error communication internal	Yes	No	-
	11	Fault infeed	Yes	No	-
	15	Other faults	Yes	No	-
<b>Note:</b>	<p>Re bit 00: Hardware or software malfunction was identified. Carry out a POWER ON of the component involved. If it occurs again, contact the hotline.</p> <p>Re bit 01: A line supply fault has occurred (phase failure, voltage level, ...). Check the line supply / fuses. Check the supply voltage. Check the wiring.</p> <p>Re bit 02: The DC link voltage has assumed an inadmissibly high value. Check the dimensioning of the system (line supply, reactor, voltages). Check the infeed settings.</p> <p>Re bit 03: An inadmissible operating state of the power electronics was identified (overcurrent, overtemperature, IGBT failure, ...). Check that the permissible load cycles are maintained. Check the ambient temperatures (fan).</p> <p>Re bit 04: The temperature in the component has exceeded the highest permissible limit. Check the ambient temperature / control cabinet cooling.</p> <p>Re bit 05: A ground fault / inter-phase short-circuit was detected in the power cables or in the motor windings. Check the power cable (connection). Check the motor.</p>				

Re bit 06:

The motor was operated outside the permissible limits (temperature, current, torque, ...). Check the load cycles and limits that have been set. Check the ambient temperature / motor cooling.

Re bit 07:

The communication to the higher-level control system (internal coupling, PROFIBUS, PROFINET, ...) is faulted or interrupted. Check the state of the higher-level control system. Check the communication connection/wiring. Check the bus configuration / clock cycles.

Re bit 08:

A safety operation monitoring function (Safety) has detected an error.

Re bit 09:

When evaluating the encoder signals (track signals, zero marks, absolute values, ...) an illegal signal state was detected. Check the encoder / state of the encoder signals. Observe the maximum frequencies.

Re bit 10:

The internal communication between the SINAMICS components is faulted or interrupted. Check the DRIVE-CLiQ wiring. Ensure an EMC-compliant design. Observe the maximum permissible quantity structure / clock cycles.

Re bit 11:

The infeed is faulted or has failed. Check the infeed and the surroundings (line supply, filter, reactors, fuses, ...). Check the closed-loop infeed control.

Re bit 15:

Group fault. Determine the precise cause of the fault using the commissioning tool.

---

**p3117**
**Change safety message type / Ch. SI mess type**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	1	0

**Description:**

Sets the re-parameterization of all safety messages for faults and alarms.  
The relevant message type during changeover is selected by the firmware.  
0: Safety messages are not re-parameterized  
1: Safety messages are re-parameterized

**Note:**

A change only becomes effective after a POWER ON.

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**r3120[0...63]**
**Component fault / Comp fault**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8060
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	3	-

**Description:**

Displays the component of the fault which has occurred.

**Value:**

0: No assignment  
1: Control Unit  
2: Power Module  
3: Motor

**Dependency:**

Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3122

**Note:**

The buffer parameters are cyclically updated in the background (refer to status signal in r2139).  
The structure of the fault buffer and the assignment of the indices is shown in r0945.

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**r3121[0...63]**
**Component alarm / Comp alarm**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8065
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	3	-

**Description:**

Displays the component of the alarm which has occurred.

## 2 Parameters

### 2.2 List of parameters

**Value:**  
 0: No assignment  
 1: Control Unit  
 2: Power Module  
 3: Motor

**Dependency:** Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2145, r2146, r3123

**Note:** The buffer parameters are cyclically updated in the background (refer to status signal in r2139).  
 The structure of the alarm buffer and the assignment of the indices is shown in r2122.

#### r3122[0...63]

#### Diagnostic attribute fault / Diag\_attr fault

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8060
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Displays the diagnostic attribute of the fault which has occurred.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Hardware replacement recommended	Yes	No	-
	15	Message has gone	Yes	No	-
	16	PROFIdrive fault class bit 0	High	Low	-
	17	PROFIdrive fault class bit 1	High	Low	-
	18	PROFIdrive fault class bit 2	High	Low	-
	19	PROFIdrive fault class bit 3	High	Low	-
	20	PROFIdrive fault class bit 4	High	Low	-

**Dependency:** Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3120

**Note:** The buffer parameters are cyclically updated in the background (refer to status signal in r2139).  
 The structure of the fault buffer and the assignment of the indices is shown in r0945.

Re bits 20 ... 16:

- Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 0 --> PROFIdrive message class 0: not assigned
- Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 1 --> PROFIdrive message class 1: hardware fault/software error
- Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 0 --> PROFIdrive message class 2: line fault
- Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 1 --> PROFIdrive message class 3: supply voltage fault
- Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 0 --> PROFIdrive message class 4: DC link fault
- Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 1 --> PROFIdrive message class 5: power electronics faulted
- Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 0 --> PROFIdrive message class 6: overtemperature electronic components
- Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 1 --> PROFIdrive message class 7: ground fault/phase fault detected
- Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 0 --> PROFIdrive message class 8: motor overload
- Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 1 --> PROFIdrive message class 9: communication error to the higher-level control
- Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 0 --> PROFIdrive message class 10: safe monitoring channel has identified an error
- Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 1 --> PROFIdrive message class 11: incorrect position actual value/speed actual value or not available
- Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 12: internal (DRIVE-CLiQ) communication error
- Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 1 --> PROFIdrive message class 13: infeed unit faulted
- Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 0 --> PROFIdrive message class 14: braking controller/Braking Module faulted
- Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 1 --> PROFIdrive message class 15: line filter faulted
- Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 0 --> PROFIdrive message class 16: external measured value/signal state outside the permissible range
- Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 1 --> PROFIdrive message class 17: application/technology function faulted
- Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 0 --> PROFIdrive message class 18: error in the parameterization/configuration/commissioning sequence
- Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 1 --> PROFIdrive message class 19: general drive fault



r3123[0...63]	Diagnostic attribute alarm / Diag_attr alarm				
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32			
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -			
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8065			
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>			
-	-	-			
<b>Description:</b>	Displays the diagnostic attribute of the alarm which has occurred.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Hardware replacement recommended	Yes	No	-
	11	Alarm class bit 0	High	Low	-
	12	Alarm class bit 1	High	Low	-
	13	Maintenance required	Yes	No	-
	14	Maintenance urgently required	Yes	No	-
	15	Message has gone	Yes	No	-
	16	PROFIdrive fault class bit 0	High	Low	-
	17	PROFIdrive fault class bit 1	High	Low	-
	18	PROFIdrive fault class bit 2	High	Low	-
	19	PROFIdrive fault class bit 3	High	Low	-
	20	PROFIdrive fault class bit 4	High	Low	-
<b>Dependency:</b>	Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2145, r2146, r3121				
<b>Note:</b>	The buffer parameters are cyclically updated in the background (refer to status signal in r2139). The structure of the alarm buffer and the assignment of the indices is shown in r2122. Re bit 12, 11: These status bits are used for the classification of internal alarm classes and are intended for diagnostic purposes only on certain automation systems with integrated SINAMICS functionality. Re bits 20 ... 16: Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 0 --> PROFIdrive message class 0: not assigned Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 1 --> PROFIdrive message class 1: hardware fault/software error Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 0 --> PROFIdrive message class 2: line fault Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 1 --> PROFIdrive message class 3: supply voltage fault Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 0 --> PROFIdrive message class 4: DC link fault Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 1 --> PROFIdrive message class 5: power electronics faulted Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 0 --> PROFIdrive message class 6: overtemperature electronic components Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 1 --> PROFIdrive message class 7: ground fault/phase fault detected Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 0 --> PROFIdrive message class 8: motor overload Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 1 --> PROFIdrive message class 9: communication error to the higher-level control Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 0 --> PROFIdrive message class 10: safe monitoring channel has identified an error Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 1 --> PROFIdrive message class 11: incorrect position actual value/speed actual value or not available Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 12: internal (DRIVE-CLiQ) communication error Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 1 --> PROFIdrive message class 13: infeed unit faulted Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 0 --> PROFIdrive message class 14: braking controller/Braking Module faulted Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 1 --> PROFIdrive message class 15: line filter faulted Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 0 --> PROFIdrive message class 16: external measured value/signal state outside the permissible range Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 1 --> PROFIdrive message class 17: application/technology function faulted Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 0 --> PROFIdrive message class 18: error in the parameterization/configuration/commissioning sequence Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 1 --> PROFIdrive message class 19: general drive fault				

## 2 Parameters

### 2.2 List of parameters

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<b>r3131</b>	<b>CO: Actual fault value / Act fault val</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the fault value of the oldest active fault.		
<b>Dependency:</b>	Refer to: r2131, r3132		

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<b>r3132</b>	<b>CO: Actual component number / Comp_no act</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the component number of the oldest fault that is still active.		
<b>Dependency:</b>	Refer to: r2131, r3131		

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<b>p3230[0...n]</b>	<b>CI: Load monitoring speed actual value / Load monit n_act</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> p2000	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8012, 8013
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the speed actual value of the load monitoring.		
<b>Dependency:</b>	Refer to: r2169, p2181, p2192, p2193, p3231		
<b>Note:</b>	The parameter is only effective for p2193 = 2.		

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<b>p3231[0...n]</b>	<b>Load monitoring speed deviation / Load monit n_dev</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8013
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	210000.00 [rpm]	150.00 [rpm]
<b>Description:</b>	Sets the permissible speed deviation during load monitoring (for p2193 = 2).		
<b>Dependency:</b>	Refer to: r2169, p2181, p2193, p3230		

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<b>p3232[0...n]</b>	<b>BI: Load monitoring failure detection / Load_moni fail_det</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8013
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	1
<b>Description:</b>	Sets the signal source for detecting a failure.		
<b>Dependency:</b>	Refer to: p2192, p2193		
<b>Note:</b>	Monitoring is triggered with a 0 signal, as soon as the time in p2192 has expired.		

<b>p3233[0...n]</b>	<b>Torque actual value filter time constant / M_act_filt T</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8013
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	1000000 [ms]	100 [ms]
<b>Description:</b>	Sets the time constant for the PT1 element to smooth the torque actual value. The smoothed torque actual value is compared with the threshold values and is only used for messages and signals.		
<b>p3235</b>	<b>Phase failure signal motor monitoring time / Ph_fail t_monit</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0 [ms]	2000 [ms]	320 [ms]
<b>Description:</b>	Sets the monitoring time for phase failure detection of the motor.		
<b>Notice:</b>	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.		
<b>Note:</b>	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).		
<b>p3320[0...n]</b>	<b>Fluid flow machine power point 1 / Fluid_mach P1</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	100.00	25.00
<b>Description:</b>	For the energy-saving display of a fluid-flow machine, a typical flow characteristic $P = f(n)$ with 5 points along the characteristic is required. This parameter specifies the power (P) of point 1 as a [%]. The characteristic comprises the following value pairs: Power (P) / speed (n) p3320 / p3321 --> point 1 (P1 / n1) p3322 / p3323 --> point 2 (P2 / n2) p3324 / p3325 --> point 3 (P3 / n3) p3326 / p3327 --> point 4 (P4 / n4) p3328 / p3329 --> point 5 (P5 / n5)		
<b>Dependency:</b>	Refer to: r0041, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3328, p3329		
<b>Note:</b>	The reference value for power and speed is the rated power/rated speed. The energy saved is displayed in r0041.		
<b>p3321[0...n]</b>	<b>Fluid flow machine speed point 1 / Fluid_mach n1</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	100.00	0.00
<b>Description:</b>	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 [%].		

## 2 Parameters

### 2.2 List of parameters

The characteristic comprises the following value pairs:

Power (P) / speed (n)

p3320 / p3321 --> point 1 (P1 / n1)

p3322 / p3323 --> point 2 (P2 / n2)

p3324 / p3325 --> point 3 (P3 / n3)

p3326 / p3327 --> point 4 (P4 / n4)

p3328 / p3329 --> point 5 (P5 / n5)

**Dependency:** Refer to: r0041, p3320, p3322, p3323, p3324, p3325, p3326, p3327, p3328, p3329

**Note:** The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

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#### p3322[0...n]

#### Fluid flow machine power point 2 / Fluid\_mach P2

**Access level:** 2

**Calculated:** -

**Data type:** FloatingPoint32

**Can be changed:** U, T

**Scaling:** -

**Dyn. index:** DDS, p0180

**Units group:** -

**Unit selection:** -

**Func. diagram:** -

**Min**

**Max**

**Factory setting**

0.00

100.00

50.00

**Description:** For the energy-saving display of a fluid-flow machine, a typical flow characteristic  $P = f(n)$  with 5 points along the characteristic is required.

This parameter specifies the power (P) of point 2 as a [%].

**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.

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#### p3323[0...n]

#### Fluid flow machine speed point 2 / Fluid\_mach n2

**Access level:** 2

**Calculated:** -

**Data type:** FloatingPoint32

**Can be changed:** U, T

**Scaling:** -

**Dyn. index:** DDS, p0180

**Units group:** -

**Unit selection:** -

**Func. diagram:** -

**Min**

**Max**

**Factory setting**

0.00

100.00

25.00

**Description:** For the energy-saving display of a fluid-flow machine, a typical flow characteristic  $P = f(n)$  with 5 points along the characteristic is required.

This parameter specifies the 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.

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#### p3324[0...n]

#### Fluid flow machine power point 3 / Fluid\_mach P3

**Access level:** 2

**Calculated:** -

**Data type:** FloatingPoint32

**Can be changed:** U, T

**Scaling:** -

**Dyn. index:** DDS, p0180

**Units group:** -

**Unit selection:** -

**Func. diagram:** -

**Min**

**Max**

**Factory setting**

0.00

100.00

77.00

**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 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.

<b>p3325[0...n]</b>	<b>Fluid flow machine speed point 3 / Fluid_mach n3</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	100.00	50.00
<b>Description:</b>	For the energy-saving display of a fluid-flow machine, a typical flow characteristic $P = f(n)$ with 5 points along the characteristic is required. This parameter specifies the speed (n) of point 3 as a [%].		
<b>Dependency:</b>	Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3326, p3327, p3328, p3329		
<b>Note:</b>	The reference value for power and speed is the rated power/rated speed. The energy saved is displayed in r0041.		
<b>p3326[0...n]</b>	<b>Fluid flow machine power point 4 / Fluid_mach P4</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	100.00	92.00
<b>Description:</b>	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 [%].		
<b>Dependency:</b>	Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3327, p3328, p3329		
<b>Note:</b>	The reference value for power and speed is the rated power/rated speed. The energy saved is displayed in r0041.		
<b>p3327[0...n]</b>	<b>Fluid flow machine speed point 4 / Fluid_mach n4</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	100.00	75.00
<b>Description:</b>	For the energy-saving display of a fluid-flow machine, a typical flow characteristic $P = f(n)$ with 5 points along the characteristic is required. This parameter specifies the speed (n) of point 4 as a [%].		
<b>Dependency:</b>	Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3328, p3329		
<b>Note:</b>	The reference value for power and speed is the rated power/rated speed. The energy saved is displayed in r0041.		
<b>p3328[0...n]</b>	<b>Fluid flow machine power point 5 / Fluid_mach P5</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	100.00	100.00
<b>Description:</b>	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 [%].		
<b>Dependency:</b>	Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3329		
<b>Note:</b>	The reference value for power and speed is the rated power/rated speed. The energy saved is displayed in r0041.		

## 2 Parameters

### 2.2 List of parameters

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<b>p3329[0...n]</b>	<b>Fluid flow machine speed point 5 / Fluid_mach n5</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	100.00	100.00
<b>Description:</b>	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 [%].		
<b>Dependency:</b>	Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3328		
<b>Note:</b>	The reference value for power and speed is the rated power/rated speed. The energy saved is displayed in r0041.		

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<b>p3330[0...n]</b>	<b>BI: 2/3 wire control command 1 / 2/3 wire cmd 1</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2272, 2273
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for command 1 for the two-wire control/three-wire control.		
<b>Dependency:</b>	Refer to: p0015, p3331, p3332, r3333, p3334		
<b>Note:</b>	The mode of operation of this binector input is dependent on the wire control set in p0015.		

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<b>p3331[0...n]</b>	<b>BI: 2/3 wire control command 2 / 2/3 wire cmd 2</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2272, 2273
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for command 2 for the two-wire control/three-wire control.		
<b>Dependency:</b>	Refer to: p0015, p3330, p3332, r3333, p3334		
<b>Note:</b>	The mode of operation of this binector input is dependent on the wire control set in p0015.		

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<b>p3332[0...n]</b>	<b>BI: 2/3 wire control command 3 / 2/3 wire cmd 3</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> CDS, p0170
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2273
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for command 3 for the two-wire control/three-wire control.		
<b>Dependency:</b>	Refer to: p0015, p3330, p3331, r3333, p3334		
<b>Note:</b>	The mode of operation of this binector input is dependent on the wire control set in p0015.		

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<b>r3333.0...3</b>	<b>CO/BO: 2/3 wire control control word / 2/3 wire STW</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2272, 2273
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	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.		

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	ON	Yes	No	-
	01	Reversing	Yes	No	-
	02	ON inverted	Yes	No	-
	03	Reversing inverted	Yes	No	-

**Dependency:** Refer to: p0015, p3330, p3331, p3332, p3334

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<b>p3334</b>	<b>2/3 wire control selection / 2/3 wire select</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2272, 2273	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0	4	0	

**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.

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<b>p3856[0...n]</b>	<b>Compound braking current / Compound I_brake</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [%]	250.00 [%]	0.00 [%]

**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.

Compound braking does not operate in the following cases:

- DC braking activated (p1230, r1239).
- motor is still not magnetized (e.g. for flying restart).
- vector control parameterized (p1300 >= 20).
- synchronous motor used (p0300 = 2xx).

**Notice:** 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:  $p3856 < 100 \% \times (r0209 - r0331) / p0305 / 2$

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%.

## 2 Parameters

### 2.2 List of parameters

<b>r3859.0</b>	<b>CO/BO: Compound braking/DC quantity control status word / Comp-br/DC_ctr ZSW</b>				
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 6797		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Display and connector output for the status word of the compound braking and DC quantity control.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Compound braking active	Yes	No	-
<b>Dependency:</b>	Refer to: p3856				
<b>p3900</b>	<b>Completion of quick commissioning / Compl quick_comm</b>				
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Integer16		
	<b>Can be changed:</b> C(1)	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	0	3	0		
<b>Description:</b>	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.				
<b>Value:</b>	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)				
<b>Notice:</b>	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.				
<b>Note:</b>	When the calculations have been completed, p3900 and p0010 are automatically reset to a value of zero. 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 (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				
<b>r3925[0...n]</b>	<b>Identification final display / Ident final_disp</b>				
	<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> Unsigned32		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the commissioning steps that have been carried out.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Motor/control parameters calculated (p0340 = 1, p3900 > 0)	Yes	No	-
	02	Motor data identification carried out at standstill (p1910 = 1)	Yes	No	-



03	Rotating measurement carried out (p1960 = 1, 2)	Yes	No	-
08	Motor identification data have been automatically backed up	Yes	No	-
15	Motor equivalent circuit diagram parameters changed	Yes	No	-

**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.

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<b>r3926[0...n]</b>	<b>Voltage generation alternating base voltage amplitude / U_gen altern base</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [V]	- [V]	- [V]	

**Description:** 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 wobulation / self-setting based on the converter and the connected motor.  
Otherwise:  
Base voltage for alternating current generation in volts (wobulation active).

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<b>r3927[0...n]</b>	<b>Motor data identification control word / MotID STW</b>		
<b>Access level:</b> 3	<b>Calculated:</b> p0340 = 1	<b>Data type:</b> Unsigned32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	

**Description:** Successfully completed component of the last motor data identification carried out.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Stator inductance estimate no measurement	Yes	No	-
	02	Rotor time constant estimate no measurement	Yes	No	-
	03	Leakage inductance estimate no measurement	Yes	No	-
	05	Determine Tr and Lsig evaluation in the time range	Yes	No	-
	06	Activate vibration damping	Yes	No	-
	07	De-activate vibration detection	Yes	No	-
	11	De-activate pulse measurement Lq Ld	Yes	No	-
	12	De-activate rotor resistance Rr measurement	Yes	No	-
	14	De-activate valve interlocking time measurement	Yes	No	-
	15	Determine only stator resistance, valve voltage fault, dead time	Yes	No	-
	16	Short motor identification (lower quality)	Yes	No	-
	17	Measurement without control parameter calculation	Yes	No	-
	18	After motID direct transition into operation	Yes	No	-
	19	After MotID automatically save results	Yes	No	-
	20	Estimate cable resistance	Yes	No	-
	21	Calibrating the output voltage measurement	Yes	No	-

**Dependency:** Refer to: r3925

**Note:** The parameter is a copy of p1909.


<b>r3928[0...n]</b>		<b>Rotating measurement configuration / Rot meas config</b>			
<b>Access level:</b>	3	<b>Calculated:</b>	p0340 = 1	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b>	-	<b>Scaling:</b>	-	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b>	-	<b>Unit selection:</b>	-	<b>Func. diagram:</b> -	
<b>Min</b>	-	<b>Max</b>	-	<b>Factory setting</b>	
<b>Description:</b>	Successfully completed component of the last rotating measurement carried out.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	01	Saturation characteristic identification	Yes	No	-
	02	Moment of inertia identification	Yes	No	-
	03	Re-calculates the speed controller parameters	Yes	No	-
	04	Speed controller optimization (vibration test)	Yes	No	-
	05	q leakage inductance ident. (for current controller adaptation)	Yes	No	-
	11	Do not change the controller parameters during the measurement	Yes	No	-
	12	Measurement shortened	Yes	No	-
	13	After measurement direct transition into operation	Yes	No	-
<b>Dependency:</b>	Refer to: r3925				
<b>Note:</b>	The parameter is a copy of p1959.				

<b>r3929[0...n]</b>		<b>Motor data identification modulated voltage generation / MotID U_gen mod</b>			
<b>Access level:</b>	4	<b>Calculated:</b>	p0340 = 1	<b>Data type:</b> Unsigned32	
<b>Can be changed:</b>	-	<b>Scaling:</b>	-	<b>Dyn. index:</b> DDS, p0180	
<b>Units group:</b>	-	<b>Unit selection:</b>	-	<b>Func. diagram:</b> -	
<b>Min</b>	-	<b>Max</b>	-	<b>Factory setting</b>	
<b>Description:</b>	Configuration of voltage generation for the various MotID sections in the case of the most recent successful MotID.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Wobble U_generate to determine dead-time correction	Yes	No	-
	01	Wobble U_generate to determine stator resistance	Yes	No	-
	02	Wobble U_generation to determine rotor time constant	Yes	No	-
	03	Wobble U_generation to determine leakage inductance	Yes	No	-
	04	Wobble U_generation to determine dynamic leakage inductance	Yes	No	-
	05	Wobble U_generation to determine magnetizing inductance	Yes	No	-
	08	Alternating U_generate to determine dead-time correction	Yes	No	-
	09	Alternating U_generate to determine stator resistance	Yes	No	-
	10	Alternating U_generate to determine rotor time constant	Yes	No	-
	11	Alternating U_generate to determine leakage inductance	Yes	No	-
	12	Alternating U_generate to determine dyn. leakage inductance	Yes	No	-
	13	Alternating U_generate to determine magnetizing inductance	Yes	No	-

<b>r3930[0...4] Power unit EEPROM characteristics / PU characteristics</b>					
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	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)				
<b>p3950 Service parameter / Serv par</b>					
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> C, U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	For service personnel only.				
<b>r3960[0...1] Control Unit temperature measured / CU temp measured</b>					
CU240E-2	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32		
CU240E-2_DP	<b>Can be changed:</b> -	<b>Scaling:</b> p2006	<b>Dyn. index:</b> -		
CU240E-2_DP_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_PN_F	- [°C]	- [°C]	- [°C]		
CU240E-2 PN					
<b>Description:</b>	Displays the measured Control Unit temperature. An appropriate message is output when 87 °C is exceeded.				
<b>Index:</b>	[0] = Actual measured value [1] = Maximum measured value				
<b>Note:</b>	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.				
<b>r3974 Drive unit status word / Drv_unit ZSW</b>					
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the status word for the drive unit.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Software reset active	Yes	No	-
	01	Writing of parameters disabled as parameter save in progress	Yes	No	-
	02	Writing of parameters disabled as macro is running	Yes	No	-

<b>r3978</b>	<b>BICO CounterDevice / BICO CounterDevice</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the counter reading for modified BICO interconnections on this device. The counter is incremented by one for each modified BICO interconnection.		

<b>p3981</b>	<b>Faults acknowledge drive object / Faults ackn DO</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 8060
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	Setting to acknowledge all active faults of a drive object.		
<b>Notice:</b>	Safety messages cannot be acknowledged using this parameter.		
<b>Note:</b>	Parameter should be set from 0 to 1 to acknowledge. After acknowledgement, the parameter is automatically reset to 0.		

<b>p3985</b>	<b>Master control mode selection / PcCtrl mode select</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	Sets the mode to change over the master control / LOCAL mode.		
<b>Value:</b>	0: Change master control for STW1.0 = 0 1: Change master control in operation		
<b>Danger:</b>	When changing the master control in operation, the drive can manifest undesirable behavior - e.g. it can accelerate up to another setpoint.		
			



<b>r3986</b>	<b>Parameter count / Parameter No.</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the number of parameters for this drive unit. The number comprises the device-specific and the drive-specific parameters.		
<b>Dependency:</b>	Refer to: r0980, r0981, r0989		

<b>r3988[0...1]</b>	<b>Boot state / Boot_state</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	800	-
<b>Description:</b>	Index 0: Displays the boot state. Index 1: Displays the partial boot state		

<b>Value:</b>	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
<b>Index:</b>	[0]	= System
	[1]	= Partial boot

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<b>r3996[0...1]</b>	<b>Parameter write inhibit status / Par_write inhib st</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	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.		
<b>Index:</b>	[0] = Progress calculations [1] = Cause		
<b>Note:</b>	Re index 1: Only for internal Siemens troubleshooting.		

<b>p5300[0...n]</b>	<b>Autotuning selection / Autotuning select</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 5045
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-1	2	0
<b>Description:</b>	<p>Sets activation/de-activation of the "auto tuning" function.                      To permanently save the values that have been set, the parameters must be saved in a non-volatile memory (p0977 = 1).                      The individual measuring steps can be configured in the following parameters:                      p5301 for "One Button Tuning" (p5300=1) - this function is being prepared                      p5302 for "Online Tuning" (p5300=2)</p> <p>Sets activation/de-activation of the "onlinetuning" function. The following parameters are written to when online tuning is activated: p430, p1160, p1400, p1413 - p1426, p1428, p1429, p1433 - p1435, p1441, p1460 - p1465, p1498, p1513, p1656 - p1676, p2533 - p2539, p2567, p2572, p2573, p5280</p>		
<b>Value:</b>	<p>-1: Reset (restore default values)                      0: Inactive                      1: One Button Tuning                      2: Online Tuning</p>		
<b>Dependency:</b>	<p>The prerequisite for the "auto tuning" function is that the "Moment of inertia estimator" function module is activated (r0108.10).                      Refer to: p5301, p5302</p>		
<b>Warning:</b>	<p>Only the motor measuring system is taken into account when optimizing the position controller. If an external measuring system is used for the position control, then this can result in an unstable controller setting.</p>		
			
<b>Caution:</b>	<p>For some drive trains, the "onlinetuning" function can result in unstable settings. (motor makes a whistling sound). This is especially the case for high load moments of inertia, which are coupled to the motor through a low-frequency connection/coupling. This case, parameter p5272 or p5273 must be reduced.</p>		
			
<b>Note:</b>	<p>If p5300 = -1:                      Autotuning is deactivated, and p5300 is automatically set to 0. In addition, the default setting values for the speed and position controller are restored.</p> <p>If p5300 = 0:                      Online tuning is inactive. To permanently save the values determined for the speed and position controllers, the parameters must be saved in a non-volatile memory (p0977 = 1).                      The results of the moment of inertia estimator can be reset using p5300 = 0. The moment of inertia and the tuning parameters must be redetermined after p5300&gt;0.</p> <p>If p5300 = 1:                      One Button Tuning is active. The moment of inertia is determined once using a test signal. The controller parameters and current setpoint filters are additionally determined once using a noise signal as excitation source.</p> <p>If p5300 = 2:                      Onlinetuning is active. The moment of inertia is estimated. The controller parameters are recalculated if the moment of inertia noticeably changes.</p>		

<b>p5301[0...n]</b>	<b>One Button Tuning configuration / OBT config</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0000 0111 bin
<b>Description:</b>	<p>Setting the functions for One Button Tuning (p5300 = 1).                      As long as autotuning is still active (p5300 &lt;&gt; 0), it is not possible to change the configuration.                      A test signal is required for some measuring steps. Parameters p5307 to p5309 must be observed for this purpose.</p>		

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Setting Kp	Yes	No	-
	01	Setting current setpoint filter	Yes	No	-
	02	Moment of inertia estimator	Yes	No	-
	07	Synchronized axes	Yes	No	-

**Dependency:** Refer to: p5300

**Note:** Re bit 00:

The speed controller gain is determined and set using a noise signal.

Re bit 01:

Possibly required current setpoint filters are determined and set using a noise signal.

As a consequence, a higher dynamic performance can be achieved in the speed control loop.

Re bit 02:

Using this bit, the moment of inertia is determined using a test signal. If this bit is not set, then the load moment of inertia must be manually parameterized in parameter p1498. The test signal must have been previously set using parameters p5308 and p5309.

Re bit 07:

With this function, these axes are adapted to the dynamic response set in p5275. This is necessary for interpolating axes. The time in p5275 should be set according to the axis with the lowest dynamic response.

p5302[0...n]	Online tuning configuration / OT config		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> DDS, p0180
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0000 1100 bin

**Description:** Setting the functions for online tuning (p5300 = 2).  
As long as autotuning is still active (p5300 <> 0), it is not possible to change the configuration.  
A noise signal is required for some measuring steps.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Setting Kp	Yes	No	-
	01	Setting current setpoint filter	Yes	No	-
	02	Moment of inertia estimator	Yes	No	-
	03	Moment of inertia estimator	Cyclic	Once	-
	06	Current setpoint filter adaptation	Yes	No	-
	07	Synchronized axes	Yes	No	-

**Dependency:** This parameter can only be changed if p5300=0 has been parameterized.

Refer to: p5300

**Caution:**



Please note the general conditions of the moment of inertia estimator, online tuning and adaptive resonance filter.  
See Function Manual FH1.

**Note:**

Re bit 00: being prepared

The speed controller gain is determined and set using a noise signal.

Re bit 01: being prepared

Possibly required current setpoint filters are determined and set using a noise signal.

As a consequence, a higher dynamic performance can be achieved in the speed control loop.

Re bit 02:

Using this bit, the moment of inertia is determined while traversing (moment of inertia estimator). If this bit is not set, then the load moment of inertia must be manually parameterized in parameter p1498.

Re bit 03:

If "once" has been parameterized, then after successfully determining the moment of inertia p1498 the moment of inertia estimator is deactivated.

If "Cyclic" has been parameterized, then the moment of inertia is continually determined and the controller parameters adapted. After the moment of inertia has been successfully determined (r1407.26=1), we recommend that the parameter is saved. This means that after power on, the controller does not have to re-stabilize.

## 2 Parameters

### 2.2 List of parameters

Re bit 06:

The adaptation of a current setpoint filter can be set here. See p5280-p5285.

This adaptation may be necessary if a mechanical resonance frequency changes in operation. It can also be used to dampen a fixed resonance frequency. Once the control loop has stabilized, this bit should be deactivated and the determined parameters saved in a non-volatile fashion.

Re bit 07:

With this function, these axes are adapted to the dynamic response set in p5275. This is necessary for interpolating axes. The time in p5275 should be set according to the axis with the lowest dynamic response.

---

<b>r5397</b>	<b>Mot_temp_mod 3 ambient temperature image p0613 / AmbTmp image p0613</b>	
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8017
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [°C]	- [°C]	- [°C]
<b>Description:</b>	Displays the ambient temperature for motor temperature model 3. This value is used to calculate the utilization display (p0034). The parameter value is an image of p0613.	
<b>Dependency:</b>	Refer to: r0034	
<b>Note:</b>	Users cannot see and change parameter p0613 (only Siemens internal).	

---

<b>r5398[0...n]</b>	<b>Mot_temp_mod 3 alarm threshold image p5390 / A thr image p5390</b>	
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8017
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [°C]	- [°C]	- [°C]
<b>Description:</b>	Displays the alarm threshold for monitoring the motor temperature for motor temperature model 3. This value is used to calculate the utilization display (p0034). The parameter value is an image of p5390.	
<b>Note:</b>	Users cannot see and change parameter p5390 (only Siemens internal).	

---

<b>r5399[0...n]</b>	<b>Mot_temp_mod 3 fault threshold image p5391 / F thr image p5391</b>	
<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> MDS
<b>Units group:</b> 21_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 8017
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
- [°C]	- [°C]	- [°C]
<b>Description:</b>	Sets the fault threshold for monitoring the motor temperature for motor temperature model 3. Fault F07011 is output after the fault threshold is exceeded. The parameter value is an image of p5391.	
<b>Note:</b>	Users cannot see and change parameter p5391 (only Siemens internal).	

---

<b>r5600</b>	<b>Pe energy saving mode ID / Pe mode ID</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	-
<b>Description:</b>	Displays the PROFlenergy mode ID of the effective energy saving mode.		
<b>Value:</b>	0: POWER OFF 2: Energy-saving mode 2 255: Ready		
<b>Note:</b>	Pe: PROFlenergy profiles		



<b>p5602[0...1]</b>	<b>Pe energy-saving mode pause time minimal / Pe mod t_pause min</b>				
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
CU240E-2 PN	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2381		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	300000 [ms]	4294967295 [ms]	[0] 300000 [ms] [1] 480000 [ms]		
<b>Description:</b>	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 regular - Energy-saving mode, dwell time minimal				
<b>Index:</b>	[0] = Reserved [1] = Mode 2				
<b>Note:</b>	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				
<b>p5606[0...1]</b>	<b>Pe energy-saving mode dwell time maximum / Pe t_dwell max</b>				
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
CU240E-2 PN	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	0 [ms]	4294967295 [ms]	4294967295 [ms]		
<b>Description:</b>	Sets the maximum dwell time for the energy-saving mode.				
<b>Index:</b>	[0] = Reserved [1] = Mode 2				
<b>Note:</b>	Pe: PROFIenergy profiles				
<b>p5611</b>	<b>Pe energy-saving properties general / Pe properties gen</b>				
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
CU240E-2 PN	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 bin		
<b>Description:</b>	Sets the general properties for energy-saving.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Inhibit PROFIenergy control commands	Yes	No	-
	01	Drive initiates OFF1 when transitioning to energy-saving mode	Yes	No	-
	02	Trans into energy-saving mode from PROFIdrive state S4 poss	Yes	No	-
<b>Note:</b>	Pe: PROFIenergy profiles PROFIdrive state S4: operation				
<b>p5612[0...1]</b>	<b>Pe energy-saving properties mode-dependent / Pe properties mod</b>				
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
CU240E-2 PN	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	[0] 0110 bin [1] 0000 bin		
<b>Description:</b>	Sets the mode-dependent properties for energy-saving.				

## 2 Parameters

### 2.2 List of parameters

**Index:** [0] = Reserved  
[1] = Mode 2

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Reserved	Yes	No	-

**Note:** Pe: PROFIenergy profiles

---

#### r5613.0...1 CO/BO: Pe energy-saving active/inactive / Pe save act/inact

CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**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

---

#### p5614 BI: Pe set switch-on inhibit signal source / Pe sw on\_inh s\_src

CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
CU240E-2 PN	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**Description:** Sets the signal source to set in the PROFIdrive state S1 "switching-on inhibit".

**Dependency:** Refer to: r5613

**Note:** Pe: PROFIenergy profiles

---

#### r7758[0...19] KHP Control Unit serial number / KHP CU ser\_no

	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**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

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#### p7759[0...19] KHP Control Unit reference serial number / KHP CU ref ser\_no

	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**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.

---

<b>r7760</b>	<b>Write protection/know-how protection status / Wr_prot/KHP stat</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	

**Description:** Displays the status for the write protection and know-how protection.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Write protection active	Yes	No	-
	01	Know-how protection active	Yes	No	-
	02	Know-how protection temporarily withdrawn	Yes	No	-
	03	Know-how protection cannot be deactivated	Yes	No	-
	04	Extended copy protection is active	Yes	No	-
	05	Basic copy protection is active	Yes	No	-
	06	Trace and measuring functions for diagnostic purposes active	Yes	No	-

**Dependency:** Refer to: p7761, p7765, p7766, p7767, p7768

**Note:** KHP: Know-How Protection

Re bit 00:  
Write protection can be activated/deactivated via p7761 on the Control Unit.

Re bit 01:  
The know-how protection can be activated by entering a password (p7766 ... p7768).

Re bit 02:  
If it has already been activated, know-how protection can be temporarily deactivated by entering the valid password in p7766. In this case, bit 1 = 0 and bit 2 = 1 offset.

Re bit 03:  
Know-how protection cannot be deactivated, as p7766 is not entered in the OEM exception list (only the factory setting is possible). This bit is only set if know-how protection is active (bit 1 = 1) and p7766 has not been entered in the OEM exception list.

Re bit 04:  
When know-how protection has been activated, the contents of the memory card (parameter and DCC data) can be additionally protected against being used with other memory cards/Control Units. This bit is only set if know-how protection is active and p7765 bit 00 is set.

Re bit 05:  
When know-how protection has been activated, the contents of the memory card (parameter and DCC data) can be additionally protected against being used with other memory cards. This bit is only set if know-how protection is active and in p7765 bit 01 is set and not bit 00.

Re bit 06:  
When know-how protection is activated, the drive data can be traced using the device trace function. This bit is only set if know-how protection is active and in p7765.2 is set.

---

<b>p7761</b>	<b>Write protection / Write protection</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0	1	0	

**Description:** Setting for activating/de-activating the write protection for adjustable parameters.

**Value:**

- 0: Deactivate write protection
- 1: Activate write protection

**Dependency:** Refer to: r7760

## 2 Parameters

### 2.2 List of parameters

**Note:** Parameters with the "WRITE\_NO\_LOCK" attributes are excluded from the write protection.  
A product-specific list of these parameters is also available in the corresponding List Manual.

---

<b>p7762</b>	<b>Write protection multi-master fieldbus system access behavior / Fieldbus acc_behav</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0	1	0	

**Description:** Sets the behavior for write protection when accessing via multi-master fieldbus systems (e.g. CAN, BACnet).

**Value:**  
0: Write access independent of p7761  
1: Write access dependent on p7761

**Dependency:** Refer to: r7760, p7761

---

<b>p7763</b>	<b>KHP OEM exception list number of indices for p7764 / KHP OEM qty p7764</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
1	500	1	

**Description:** Sets the number of parameters for the OEM exception list (p7764[0...n]).  
p7764[0...n], with n = p7763 - 1

**Dependency:** Refer to: p7764

**Note:** KHP: Know-How Protection

Even if know-how protection is set, parameters in this list can be read and written to.

---

<b>p7764[0...n]</b>	<b>KHP OEM exception list / KHP OEM excep list</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> p7763	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
0	65535	[0] 7766 [1...499] 0	

**Description:** OEM exception list (p7764[0...n]) for setting parameters that should be excluded from know-how protection.  
p7764[0...n], with n = p7763 - 1

**Dependency:** 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.

---

<b>p7765</b>	<b>KHP configuration / KHP config</b>		
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	0000 bin	

**Description:** Configuration settings for know-how protection.

Re bit 00, 01:

When KHP is activated, 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/Control Units.

Re bit 02:

This means that the OEM can define whether it is possible or not to trace the drive data using the device trace function although KHP is activated.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Extended copy protection - linked to the memory card and CU	Yes	No	-
	01	Basic copy protection - linked to the memory card	Yes	No	-
	02	Permit trace and measuring functions for diagnostic purposes	Yes	No	-

**Dependency:** Refer to: p7766, p7767, p7768

**Note:** KHP: Know-How Protection

For copy protection, the serial numbers of the memory card and/or Control Unit are checked. The memory card copy protection and preventing data to be traced are only effective when the know-how protection has been activated.

Re bit 00, 01:  
If both bits are inadvertently set to 1 (e.g. at the BOP), then the setting of bit 0 applies.  
There is no copy protection if both bits are set to 0.

---

p7766[0...29]	KHP password input / KHP passw input		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Sets the password for know-how protection.  
Example of a password:  
123aBc = 49 50 51 97 66 99 dec (ASCII characters)  
[0] = character 1 (e.g. 49 dec)  
[1] = character 2 (e.g. 50 dec)  
...  
[5] = character 6 (e.g. 99 dec)  
[29] = 0 dec (completes the entry)

**Dependency:** Refer to: p7767, p7768

**Notice:** An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.  
When using the STARTER commissioning software, the password should be entered using the associated dialogs. The following rules apply when entering the password:  
- Password entry must start with p7766[0].  
- No gaps are permissible in the password.  
- Entering a password is completed when writing to p7766[29] (p7766[29] = 0 for passwords less than 30 characters).

**Note:** KHP: Know-How Protection  
When reading, p7766[0...29] = 42 dec (ASCII character = "\*\*\*") is displayed.  
Parameters with the "KHP\_WRITE\_NO\_LOCK" attribute are not involved in the know-how protection.  
Parameters with the "KHP\_ACTIVE\_READ" attribute can be read even when know-how protection is activated.  
A product-specific list of these parameters is also available in the corresponding List Manual.

---

p7767[0...29]	KHP password new / KHP passw new		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**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.

---

<b>p7768[0...29]</b>	<b>KHP password confirmation / KHP passw confirm</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Confirms the new password for know-how protection.		
<b>Dependency:</b>	Refer to: p7766, p7767		
<b>Note:</b>	KHP: Know-How Protection When reading, p7768[0...29] = 42 dec (ASCII character = "*" ) is displayed.		

---

<b>p7769[0...20]</b>	<b>KHP memory card reference serial number / KHP mem ref ser_no</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p7765, p7766, p7767, p7768		
<b>Note:</b>	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.		

---

<b>p7775</b>	<b>NVRAM data backup/import/delete / NVRAM backup</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> C, U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	17	0
<b>Description:</b>	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		
<b>Value:</b>	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		
<b>Notice:</b>	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).

---

<b>r7841[0...15]</b>	<b>Power Module serial number / PM serial no.</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	

**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.

---

<b>r7843[0...20]</b>	<b>Memory card serial number / Mem_card ser.no</b>		
<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
-	-	-	

**Description:** Displays the actual serial number of the memory card.  
The individual characters of the serial number are displayed in the ASCII code in the indices.

**Notice:** An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

**Note:** Example: displaying the serial number for a memory card:  
r7843[0] = 49 dec --> ASCII characters = "1" --> serial number, character 1  
r7843[1] = 49 dec --> ASCII characters = "1" --> serial number, character 2  
r7843[2] = 49 dec --> ASCII characters = "1" --> serial number, character 3  
r7843[3] = 57 dec --> ASCII characters = "9" --> serial number, character 4  
r7843[4] = 50 dec --> ASCII characters = "2" --> serial number, character 5  
r7843[5] = 51 dec --> ASCII characters = "3" --> serial number, character 6  
r7843[6] = 69 dec --> ASCII characters = "E" --> serial number, character 7  
r7843[7] = 0 dec --> ASCII characters = " " --> serial number, character 8  
...  
r7843[19] = 0 dec --> ASCII characters = " " --> serial number, character 20  
r7843[20] = 0 dec  
Serial number = 111923E

---

<b>r7901[0...81]</b>	<b>Sampling times / t_sample</b>		
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
- [µs]	- [µs]	- [µs]	

**Description:** Displays the sampling times currently present on the drive unit.  
r7901[0...63]: sampling times of hardware time slices.  
r7901[64...82]: sampling times of software time slices.  
r7901[x] = 0 means that in the associated time slice, no methods have been registered.

**Note:** The basis for the software time slices is T\_NRK = p7901[13].

---

<b>r7903</b>	<b>Hardware sampling times still assignable / HW t_samp free</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Displays the number of hardware sampling times that can still be assigned.  
These free sampling times can be used by OA applications such as DCC or FBLOCKS.

**Note:** OA: Open Architecture

---

<b>r8570[0...39]</b>	<b>Macro drive object / Macro DO</b>		
	<b>Access level:</b> 1	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**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.

---

<b>r8571[0...39]</b>	<b>Macro Binector Input (BI) / Macro BI</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**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.

---

<b>r8572[0...39]</b>	<b>Macro Connector Inputs (CI) for speed setpoints / Macro CI n_set</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**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.

---

<b>r8573[0...39]</b>	<b>Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**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.



<b>r8585</b>	<b>Macro execution actual / Macro executed</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the macro currently being executed on the drive object.		
<b>Dependency:</b>	Refer to: p0015, p1000, p1500, r8570, r8571, r8572, r8573		
<b>p8805</b>	<b>Identification and maintenance 4 configuration / I&amp;M 4 config</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2 PN	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0
<b>Description:</b>	Sets the configuration for the content of identification and maintenance 4 (I&M 4, p8809).		
<b>Value:</b>	0: Standard value for I&M 4 (p8809) 1: User value for I&M 4 (p8809)		
<b>Dependency:</b>	For p8805 = 0, if the user writes at least one value in p8809[0...53], then p8805 is automatically set to = 1. When p8805 is reset = 0, then the content of the factory setting is set in p8809.		
<b>Note:</b>	Re p8805 = 0: PROFINET I&M 4 (p8809) contains the information for the SI change tracking. Re p8805 = 1: PROFINET I&M 4 (p8809) contains the values written by the user.		
<b>p8806[0...53]</b>	<b>Identification and Maintenance 1 / I&amp;M 1</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Parameters for the PROFINET data set "Identification and Maintenance 1" (I&M 1). This information is known as "System identifier" and "Location identifier".		
<b>Dependency:</b>	Refer to: p8807, p8808		
<b>Notice:</b>	Only characters belonging to the standard ASCII character set may be used (32 dec to 126 dec).		
<b>Note:</b>	An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual. Re p8806[0...31]: System identifier. Re p8806[32...53]: Location identifier.		
<b>p8807[0...15]</b>	<b>Identification and Maintenance 2 / I&amp;M 2</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Parameters for the PROFINET data set "Identification and Maintenance 2" (I&M 2). This information is known as "Installation date".		
<b>Dependency:</b>	Refer to: p8806, p8808		

## 2 Parameters

### 2.2 List of parameters

**Note:** An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.  
 Re p8807[0...15]:  
 Dates of installation or first commissioning of the (ASCII) device with the following format options.  
 YYYY-MM-DD  
 or  
 YYYY-MM-DD hh:mm  
 - YYYY: year  
 - MM: month 01 ... 12  
 - DD: day 01 ... 31  
 - hh: hours 00 ... 23  
 - mm: minutes 00 ... 59  
 Separators must be placed between the individual data, i.e. a hyphen '-', space ' ' and colon ':'.

---

<b>p8808[0...53]</b>	<b>Identification and Maintenance 3 / I&amp;M 3</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	

**Description:** Parameters for the PROFINET data set "Identification and Maintenance 3" (I&M 3).  
 This information is known as "Supplementary information".

**Dependency:** Refer to: p8806, p8807

**Notice:** Only characters belonging to the standard ASCII character set may be used (32 dec to 126 dec).

**Note:** An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.  
 Re p8808[0...53]:  
 Any supplementary information and comments (ASCII).

---

<b>p8809[0...53]</b>	<b>Identification and Maintenance 4 / I&amp;M 4</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0000 bin	1111 1111 bin	0000 bin

**Description:** Parameters for the PROFINET data set "Identification and Maintenance 4" (I&M 4).  
 This information is known as "Signature".

**Dependency:** This parameter is preassigned as standard (see note).  
 After writing information to p8809, p8805 is automatically set to = 1.  
 Refer to: p8805

**Note:** For p8805 = 0 (factory setting) the following applies:  
 Parameter p8809 contains the information described below.  
 Re p8809[0...3]:  
 Contains the value from r9781[0] "SI change tracking checksum functional".  
 Re p8809[4...7]:  
 Contains the value from r9782[0] "SI change tracking time stamp checksum functional".  
 Re p8809[8...53]:  
 Reserved.

---

<b>r8854</b>	<b>PROFINET state / PN state</b>		
CU240E-2_PN_F	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	-

**Description:** State display for PROFINET.

<b>Value:</b>	0:	No initialization
	1:	Fatal fault
	2:	Initialization
	3:	Send configuration
	4:	Receive configuration
	5:	Non-cyclic communication
	6:	Cyclic communications but no setpoints (stop/no clock cycle)
	255:	Cyclic communication

---

**r8858[0...39] PROFINET read diagnostics channel / PN diag\_chan read**

CU240E-2_PN_F	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Displays the PROFINET diagnostics data.

**Note:** Only for internal Siemens diagnostics.

---

**r8859[0...7] PROFINET identification data / PN ident data**

CU240E-2_PN_F	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Displays the PROFINET identification data

**Index:**  
 [0] = Version interface structure  
 [1] = Version interface driver  
 [2] = Company (Siemens = 42)  
 [3] = CB type  
 [4] = Firmware version  
 [5] = Firmware date (year)  
 [6] = Firmware date (day/month)  
 [7] = Firmware patch/hot fix

**Note:**  
 Example:  
 r8859[0] = 100 --> version of the interface structure V1.00  
 r8859[1] = 111 --> version of the interface driver V1.11  
 r8859[2] = 42 --> SIEMENS  
 r8859[3] = 0  
 r8859[4] = 1300 --> first part, firmware version V13.00 (second part, see index 7)  
 r8859[5] = 2011 --> year 2011  
 r8859[6] = 2306 --> 23rd June  
 r8859[7] = 1700 --> second part, firmware version (complete version: V13.00.17.00)

---

**r8909 PN device ID / PN device ID**

CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Displays the PROFINET Device ID.

Every SINAMICS device type has its own PROFINET Device ID and its own PROFINET GSD.

**Note:** List of the SINAMICS Device IDs:

0501 hex: S120/S150  
 0504 hex: G130/G150  
 050A hex: DC MASTER  
 050C hex: MV

## 2 Parameters

### 2.2 List of parameters

050F hex: G120P  
0510 hex: G120C  
0511 hex: G120 CU240E-2  
0512 hex: G120D  
0513 hex: G120 CU250S-2 Vector  
0514 hex: G110M

---

#### p8920[0...239]

##### PN Name of Station / PN Name Stat

CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Sets the station name for the onboard PROFINET interface on the Control Unit.  
The active station name is displayed in r8930.

**Note:** An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.  
The interface configuration (p8920 and following) is activated with p8925.  
The parameter is not influenced by setting the factory setting.  
PN: PROFINET

---

#### p8921[0...3]

##### PN IP address of station / PN IP of stat

CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	0

**Description:** Sets the IP address for the onboard PROFINET interface on the Control Unit.  
The active IP address is displayed in r8931.

**Note:** The interface configuration (p8920 and following) is activated with p8925.  
The parameter is not influenced by setting the factory setting.

---

#### p8922[0...3]

##### PN Default Gateway of Station / PN Def Gateway

CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	0

**Description:** Sets the default gateway for the onboard PROFINET interface on the Control Unit.  
The active default gateway is displayed in r8932.

**Note:** The interface configuration (p8920 and following) is activated with p8925.  
The parameter is not influenced by setting the factory setting.

---

#### p8923[0...3]

##### PN Subnet Mask of Station / PN Subnet Mask

CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	0

**Description:** Sets the subnet mask for the onboard PROFINET interface on the Control Unit.  
The active subnet mask is displayed in r8933.

**Note:** The interface configuration (p8920 and following) is activated with p8925.  
The parameter is not influenced by setting the factory setting.

<b>p8924</b>		<b>PN DHCP Mode / PN DHCP Mode</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8	
CU240E-2 PN	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0	3	0	
<b>Description:</b>	Sets the DHCP mode for the onboard PROFINET interface on the Control Unit. The active DHCP mode is displayed in r8934.			
<b>Notice:</b>	When the DHCP mode is active (p8924 > 0), then PROFINET communication via this interface is no longer possible! However, the interface can be used by the STARTER/SCOUT commissioning tool.			
<b>Note:</b>	The interface configuration (p8920 and following) is activated with p8925. The active DHCP mode is displayed in parameter r8934. The parameter is not influenced by setting the factory setting. If value = 0: DHCP deactivated. If value = 1: Reserved. If value = 2: DHCP activated. The MAC address of this interface is used for client identification. If value = 3: DHCP activated. The station name of this interface is used for client identification.			
<b>p8925</b>		<b>PN interface configuration / PN IF config</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
CU240E-2 PN	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0	3	0	
<b>Description:</b>	Setting to activate the interface configuration for the onboard PROFINET interface on the Control Unit. p8925 is automatically set to 0 at the end of the operation.			
<b>Value:</b>	0: No function 1: Reserved 2: Save and activate configuration 3: Delete configuration			
<b>Notice:</b>	When the DHCP mode is active (p8924 > 0), then PROFINET communication via this interface is no longer possible! However, the interface can be used by the STARTER/SCOUT commissioning tool.			
<b>Note:</b>	Re p8925 = 2: The interface configuration (p8920 and following) is saved and activated after the next POWER ON. Re p8925 = 3: The factory setting of the interface configuration is loaded after the next POWER ON.			
<b>p8929</b>		<b>PN remote controller number / PN rem ctrl num</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
CU240E-2 PN	<b>Can be changed:</b> C	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	1	2	1	
<b>Description:</b>	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).			
<b>Value:</b>	1: Automation or Safety 2: Automation and Safety			

## 2 Parameters

### 2.2 List of parameters

**Notice:** The F CPU may only use PROFIsafe telegrams.  
**Note:** A change only becomes effective after POWER ON, reset or download.

---

<b>r8930[0...239]</b>	<b>PN Name of Station active / PN Name Stat act</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Displays the active station name for the onboard PROFINET interface on the Control Unit.

---

<b>r8931[0...3]</b>	<b>PN IP Address of Station active / PN IP of Stat act</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	-

**Description:** Displays the active IP address for the onboard PROFINET interface on the Control Unit.

---

<b>r8932[0...3]</b>	<b>PN Default Gateway of Station active / PN Def Gateway act</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	-

**Description:** Displays the active default gateway for the onboard PROFINET interface on the Control Unit.

---

<b>r8933[0...3]</b>	<b>PN Subnet Mask of Station active / PN Subnet Mask act</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	-

**Description:** Displays the active subnet mask for the onboard PROFINET interface on the Control Unit.

---

<b>r8934</b>	<b>PN DHCP Mode active / PN DHCP Mode act</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	-

**Description:** Displays the active DHCP mode for the onboard PROFINET interface on the Control Unit.

**Notice:** When the DHCP mode is active (parameter value greater than 0), PROFINET communication via this interface is no longer possible! However, the interface can be used for commissioning tool such as STARTER or SCOUT.

**Note:** If value = 0:  
DHCP deactivated.  
If value = 2:  
DHCP activated. The MAC address of this interface is used for client identification.  
If value = 3:  
DHCP activated. The station name of this interface is used for client identification.

<b>r8935[0...5]</b>	<b>PN MAC Address of Station / PN MAC of Station</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0000 hex	00FF hex	-
<b>Description:</b>	Displays the MAC address for the onboard PROFINET interface on the Control Unit.		

<b>r8939</b>	<b>PN DAP ID / PN DAP ID</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	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.		
<b>Note:</b>	List of the SINAMICS DAP IDs: 20007 hex: CBE20 V4.5 20008 hex: CBE20 V4.6 20107 hex: CU310-2 PN V4.5 20108 hex: CU310-2 PN V4.6 20307 hex: CU320-2 PN V4.5 20308 hex: CU320-2 PN V4.6 20407 hex: CU230P-2 PN /CU240x-2 PN V4.5 20408 hex: CU230P-2 PN /CU240x-2 PN /CU250S-2 PN /G110M PN V4.6 20507 hex: CU250D-2 PN V4.5 20508 hex: CU250D-2 PN V4.6		

<b>r8960[0...2]</b>	<b>PN subslot controller assignment / PN subslot assign</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	8	-
<b>Description:</b>	Displays the controller assignment of a PROFINET subslot on the actual drive object.		
<b>Index:</b>	[0] = Subslot 2 PROFIsafe [1] = Subslot 3 PZD telegram [2] = Subslot 4 PZD supplementary data		
<b>Dependency:</b>	Refer to: r8961, r8962		
<b>Note:</b>	Example: If the parameter contains the value 2 in index [1], then this means that subslot 3 is assigned to controller 2.		

<b>r8961[0...3]</b>	<b>PN IP Address Remote Controller 1 / IP Addr Rem Ctrl1</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	-
<b>Description:</b>	Displays the IP address of the first PROFINET controller connected with the device via PN onboard.		

## 2 Parameters

### 2.2 List of parameters

---

<b>r8962[0...3]</b>	<b>PN IP Address Remote Controller 2 / IP Addr Rem Ctrl2</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	-

**Description:** Displays the IP address of the second PROFINET controller connected with the device via PN onboard.

---

<b>p8980</b>	<b>Ethernet/IPprofile / Eth/IP profile</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2 PN	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0

**Description:** Sets the profile for Ethernet/IP.

**Value:**  
0: SINAMICS  
1: ODVA AC/DC

**Note:** Changes only become effective after POWER ON.  
The parameter is not influenced by setting the factory setting.  
ODVA: Open DeviceNet Vendor Association

---

<b>p8981</b>	<b>Ethernet/IP ODVA STOP mode / Eth/IP ODVA STOP</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2 PN	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	1	0

**Description:** Sets the STOP mode for the Ethernet/IP ODVA profile (p8980 = 1).

**Value:**  
0: OFF1  
1: OFF2

**Dependency:** Refer to: p8980

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

---

<b>p8982</b>	<b>Ethernet/IP ODVA speed scaling / Eth/IP ODVA n scal</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2 PN	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	123	133	128

**Description:** Sets the scaling for the speed for Ethernet/IP ODVA profile (p8980 = 1).

**Value:**  
123: 32  
124: 16  
125: 8  
126: 4  
127: 2  
128: 1  
129: 0.5  
130: 0.25  
131: 0.125  
132: 0.0625  
133: 0.03125

**Dependency:** Refer to: p8980



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

---

<b>p8983</b>	<b>Ethernet/IP ODVA torque scaling / Eth/IP ODVA M scal</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2 PN	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	123	133	128

**Description:** Sets the scaling for the torque for Ethernet/IP ODVA profile (p8980 = 1).

**Value:**

123:	32
124:	16
125:	8
126:	4
127:	2
128:	1
129:	0.5
130:	0.25
131:	0.125
132:	0.0625
133:	0.03125

**Dependency:** Refer to: p8980

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

---

<b>p8991</b>	<b>USB memory access / USB mem acc</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	2	1

**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.

---

<b>p8999</b>	<b>USB functionality / USB Fct</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	3	3

**Description:** Setting 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.

<b>p9301</b>	<b>SI Motion enable safety functions (processor 2) / SI Mtn enable P2</b>				
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
CU240E-2_PN_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin		
<b>Description:</b>	Sets the enable signals for the safe motion monitoring.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Enable SI Motion	Enable	Inhibit	-
	16	Enable SSM hysteresis and filtering	Enable	Inhibit	2823
	17	Enable SDI	Enable	Inhibit	2824
	30	Enable F-DI in PROFIsafe telegram 900	Enable	Inhibit	-
<b>Dependency:</b>	Refer to: p9501				
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.				
<b>Note:</b>	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)				

<b>p9301</b>	<b>SI Motion enable safety functions (processor 2) / SI Mtn enable P2</b>				
CU240E-2_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin		
<b>Description:</b>	Sets the enable signals for the safe motion monitoring.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Enable SI Motion	Enable	Inhibit	-
	17	Enable SDI	Enable	Inhibit	2824
<b>Dependency:</b>	Refer to: p9501				
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.				
<b>Note:</b>	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)				

<b>p9306</b>	<b>SI Motion function specification (processor 2) / SI Mtn fct spec P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	1	3	1
CU240E-2_PN_F			
<b>Description:</b>	Sets the function specification for the safe motion monitoring.		
<b>Value:</b>	1: Safety without encoder and braking ramp(SBR) 3: Safety without encoder with accel_monitoring(SAM) / delay time		
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.		

<b>p9307</b>		<b>SI Motion function configuration (processor 2) / SI Mtn config P2</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_F	-	-	0011 bin		
CU240E-2_PN_F	-	-			
<b>Description:</b>	Sets the function configuration for safe motion monitoring.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Extended message acknowledgement	Yes	No	-
	01	Setpoint velocity limit for STOP F	No	Yes	-
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.				
<b>Note:</b>	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.				
<b>p9309</b>		<b>SI Motion behavior during pulse suppression (processor 2) / SI Mtn behav IL P2</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_PN_F	-	-	0000 0000 1111 1111 bin		
<b>Description:</b>	Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	SSM during pulse suppression and sensorless	Becomes inactive	Remains active	-
	08	SDI during pulse suppression and sensorless	Becomes inactive	Remains active	-
<b>Notice:</b>	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.				
<b>Note:</b>	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.				

<b>p9309 SI Motion behavior during pulse suppression (processor 2) / SI Mtn behav IL P2</b>				
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32	
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	0000 0000 1111 1111 bin	
<b>Description:</b>	Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	08	SDI during pulse suppression and sensorless	Becomes inactive	Remains active
<b>FP</b>				-
<b>Notice:</b>	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.			
<b>Note:</b>	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.			

<b>p9321[0...7] SI Motion gearbox motor/load denominator (processor 2) / SI Mtn gear den P2</b>				
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32	
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_F	1	2147000000	1	
CU240E-2_PN_F				
<b>Description:</b>	Sets the denominator for the gearbox between the motor and the load.			
<b>Index:</b>	[0] = Gearbox 1 [1] = Gearbox 2 [2] = Gearbox 3 [3] = Gearbox 4 [4] = Gearbox 5 [5] = Gearbox 6 [6] = Gearbox 7 [7] = Gearbox 8			
<b>Dependency:</b>	Refer to: p9322			
<b>Notice:</b>	It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.			

<b>p9322[0...7] SI Motion gearbox motor/load numerator (processor 2) / SI Mtn gear num P2</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	1	2147000000	1
CU240E-2_PN_F			
<b>Description:</b>	Sets the numerator for the gearbox between the motor and the load.		
<b>Index:</b>	[0] = Gearbox 1 [1] = Gearbox 2 [2] = Gearbox 3 [3] = Gearbox 4 [4] = Gearbox 5 [5] = Gearbox 6 [6] = Gearbox 7 [7] = Gearbox 8		
<b>Dependency:</b>	Refer to: p9321		
<b>Notice:</b>	It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.		
<b>Note:</b>	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)		
<b>p9331[0...3] SI Motion SLS limit values (processor 2) / SI Mtn SLS lim P2</b>			
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.01 [rpm]	100000.00 [rpm]	2000.00 [rpm]
<b>Description:</b>	Sets the limit values for the function "Safely-Limited Speed" (SLS).		
<b>Index:</b>	[0] = Limit value SLS1 [1] = Limit value SLS2 [2] = Limit value SLS3 [3] = Limit value SLS4		
<b>Dependency:</b>	Refer to: p9363, p9531		
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.		
<b>Note:</b>	SLS: Safely-Limited Speed		
<b>p9342 SI Motion act. val. comparison tolerance (crossw.) (processor 2) / SI Mtn actV tol P2</b>			
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0010 [°]	360.0000 [°]	12.0000 [°]
<b>Description:</b>	Sets the tolerance for the crosswise data comparison of the actual position between processors 1 and 2.		
<b>Dependency:</b>	Refer to: p9542		
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.		
<b>Note:</b>	For a linear axis, the tolerance is internally limited to 10 mm. For a "linear axis with rotating motor" and factory setting of p9320, p9321 and p9322, the factory setting of p9342 corresponds to a position tolerance of 36 ° on the motor side.		

<b>p9345</b>		<b>SI Motion SSM filter time (processor 2) / SI Mtn SSM filt P2</b>	
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2823
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	0.00 [µs]	100000.00 [µs]	0.00 [µs]

**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 set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle.  
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)

<b>p9346</b>		<b>SI Motion SSM velocity limit (processor 2) / SI Mtn SSM v_limP2</b>	
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2823
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	100000.00 [rpm]	20.00 [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.

**Dependency:** Refer to: p9546

**Caution:** The following applies for p9306 = 3:



The "SAM" function is switched out if the selected threshold value is undershot.

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:** SAM: Safe Acceleration Monitor (safe acceleration monitoring)  
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

<b>p9347</b>		<b>SI Motion SSM velocity hysteresis (processor 2) / SI Mtn SSM Hyst P2</b>	
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_PN_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2823
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0010 [rpm]	500.0000 [rpm]	10.0000 [rpm]

**Description:** Sets the velocity hysteresis for the SSM feedback signal to detect standstill ( $n < nx$ ).

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:** 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)

<b>p9348</b>		<b>SI Motion SAM actual velocity tolerance (processor 2) / SI mtn SAM tol P2</b>	
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	120000.00 [rpm]	300.00 [rpm]

**Description:** Sets the velocity tolerance for the "SAM" function.

**Dependency:** Refer to: p9548

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:** SAM: Safe Acceleration Monitor (safe acceleration monitoring)

<b>p9351 SI Motion SLS changeover delay time (processor 2) / SI Mtn SLS t P2</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2819, 2820
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.00 [µs]	600000000.00 [µs]	100000.00 [µs]
CU240E-2_PN_F			
<b>Description:</b>	Sets the delay time for the SLS changeover for the function "safely limited speed" (SLS). When transitioning from a higher to a lower safely-limited velocity/speed stage, within this delay time, the "old" velocity stage remains active. Even if SLS is activated from the state "SLS in active", then this delay is still applied.		
<b>Dependency:</b>	Refer to: p9551		
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.		
<b>Note:</b>	SLS: Safely-Limited Speed		
<b>p9356 SI Motion pulse suppression delay time (processor 2) / SI Mtn IL t_del P2</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2819
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.00 [µs]	3600000000.00 [µs]	600000000.00 [µs]
CU240E-2_PN_F			
<b>Description:</b>	Sets the delay time for STOP A after STOP B / SS1.		
<b>Dependency:</b>	Refer to: p9360, p9556		
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.		
<b>Note:</b>	The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle. SS1: Safe Stop 1		
<b>p9358 SI Motion acceptance test mode time limit (processor 2) / SI Mtn acc t P2</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	5000000.00 [µs]	100000000.00 [µs]	40000000.00 [µs]
CU240E-2_PN_F			
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p9558		
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.		
<b>Note:</b>	The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle.		
<b>p9360 SI Motion pulse suppression shutdown speed (processor 2) / SI Mtn IL n_sh P2</b>			
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10.00 [rpm]	6000.00 [rpm]	10.00 [rpm]
<b>Description:</b>	Sets the shutdown speed for the pulse suppression. Below this speed "standstill" is assumed and for STOP B / SS1, the pulses are suppressed (by changing to STOP A).		
<b>Dependency:</b>	Refer to: p9356, p9560		
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.		
<b>Note:</b>	The shutdown speed has no effect for a value = 0. SS1: Safe Stop 1		

<b>p9363[0...3]</b>		<b>SI Motion SLS stop response (processor 2) / SI Mtn SLS stop P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16	
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_F	0	1	0	
CU240E-2_PN_F				
<b>Description:</b>	Sets the stop response for the function "Safely-Limited Speed" (SLS). These settings apply to the individual limit values for SLS.			
<b>Value:</b>	0: STOP A 1: STOP B			
<b>Index:</b>	[0] = Limit value SLS1 [1] = Limit value SLS2 [2] = Limit value SLS3 [3] = Limit value SLS4			
<b>Dependency:</b>	Refer to: p9331, p9563			
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.			
<b>Note:</b>	SLS: Safely-Limited Speed			

<b>p9364</b>		<b>SI Motion SDI tolerance (processor 2) / SI Mtn SDI tol P2</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2824	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	0.001 [°]	360.000 [°]	12.000 [°]	
<b>Description:</b>	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.			
<b>Dependency:</b>	Refer to: p9365, p9366			
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.			
<b>Note:</b>	SDI: Safe Direction (safe motion direction)			

<b>p9365</b>		<b>SI Motion SDI delay time (processor 2) / SI Mtn SDI t P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2824	
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_F	0.00 [µs]	600000000.00 [µs]	100000.00 [µs]	
CU240E-2_PN_F				
<b>Description:</b>	Sets the delay time for the function "Safe motion direction" (SDI). After selecting the SDI function, then for a maximum of this time, motion in the monitored direction is permissible. This time can therefore be used for braking any motion.			
<b>Dependency:</b>	Refer to: p9364, p9366			
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.			
<b>Note:</b>	The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle. SDI: Safe Direction (safe motion direction)			



<b>p9366</b>	<b>SI Motion SDI stop response (processor 2) / SI Mtn SDI Stop P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2824
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	1	1
CU240E-2_PN_F			
<b>Description:</b>	Sets the stop response for the function "Safe motion direction" (SDI). This setting applies to both directions of motion. In the case of encoderless motion monitoring (p9306 = 1), only a value of 0 or 1 is permitted.		
<b>Value:</b>	0: STOP A 1: STOP B		
<b>Dependency:</b>	Refer to: p9364, p9365		
<b>Note:</b>	SDI: Safe Direction (safe motion direction)		
<b>p9368</b>	<b>SI Motion SAM velocity limit (processor 2) / SI Mtn SAM v_limP2</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	1000.00 [rpm]	0.00 [rpm]
<b>Description:</b>	Sets the velocity tolerance limit for the "SAM" function. SAM is de-activated once the set velocity limit has been undershot.		
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.		
<b>Note:</b>	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.		
<b>p9370</b>	<b>SI Motion acceptance test mode (processor 2) / SI Mtn acc_mod P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0000 hex	00AC hex	0000 hex
CU240E-2_PN_F			
<b>Description:</b>	Setting to select and de-select the acceptance test mode.		
<b>Value:</b>	0: [00 hex] De-select the acceptance test mode 172: [AC hex] Select the acceptance test mode		
<b>Dependency:</b>	Refer to: p9358, r9371		
<b>Note:</b>	Acceptance test mode can only be selected if the motion monitoring functions, which are integrated in the drives, are enabled (p9601.2/p9801.2).		
<b>r9371</b>	<b>SI Motion acceptance test status (processor 2) / SI Mtn acc_stat P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0000 hex	00AC hex	-
CU240E-2_PN_F			
<b>Description:</b>	Displays the status of the acceptance test mode.		
<b>Value:</b>	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		

## 2 Parameters

### 2.2 List of parameters

15: [0F hex] Acc\_mode not possible due to expired Acc\_timer

172: [AC hex] Acc\_mode active

**Dependency:** Refer to: p9358, p9370

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<b>p9381</b>	<b>SI Motion brake ramp reference value (processor 2) / SI Mtn ramp ref P2</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	600.0000 [rpm]	240000.0000 [rpm]	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.

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<b>p9382</b>	<b>SI Motion brake ramp delay time (processor 2) / SI Mtn rp t_del P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	10000.00 [µs]	99000000.00 [µs]	250000.00 [µs]
CU240E-2_PN_F			

**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.

**Note:** The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle.  
Internally, the set time is limited downwards to 2 safety monitoring clock cycles (2 \* 12 ms).

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<b>p9383</b>	<b>SI Motion brake ramp monitoring time (processor 2) / SI Mtn rp t_mon P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	500.00 [ms]	3600000.00 [ms]	10000.00 [ms]
CU240E-2_PN_F			

**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.

**Note:** The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle.

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<b>p9385</b>	<b>SI Motion actual value sensing sensorless fault tolerance (MM) / ActVal si tol MM</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-1	4	-1
CU240E-2_PN_F			

**Description:** Sets the tolerance of the plausibility monitoring of the current and voltage angle.  
A higher value results in a higher degree of ruggedness when reversing at low speeds, as well as in the field weakening range for load steps.  
An increase is advantageous, if the current or voltage at the motor become small.

**Dependency:** Refer to: p9507

**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 and a higher velocity deviation (r9787).

**Note:** This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).  
For synchronous motors, the value 4 must be set.  
If value = -1:  
- for synchronous motors, the calculation is automatically made with the value 4.  
- for induction motors, the calculation is automatically made with a value of 0 (if the code number of the power unit p0201[0] < 14000, otherwise with a value of 2).

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### p9386 SI Motion actual value sensing sensorless delay time (P2) / ActVal sl t\_del P2

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	5.00 [ms]	1000.00 [ms]	100.00 [ms]
CU240E-2_PN_F			

**Description:** Sets the delay time to evaluate the encoderless actual value sensing after the pulses have been enabled.  
The value must be greater than or equal to the motor magnetizing time (p0346).

**Caution:** The safety functionality is only completely guaranteed after this time has expired.



**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.  
If this value is reduced, this can have a negative impact on the actual value acquisition and plausibility check – and result in Safety message C30711 with the message value 1041 or 1042.

**Note:** This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).  
The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle.

---

### p9387 SI Motion actual value sensing sensorless filter time (P2) / Actv sl t\_filt P2

PM240	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.00 [µs]	100000.00 [µs]	25000.00 [µs]
CU240E-2_PN_F			

**Description:** Sets the filter time for smoothing the actual value with sensorless actual value sensing.

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.  
A longer filter time results in a longer response time.

---

### p9388 SI Motion actual value sensing minimum current (P2) / ActVal sl I\_min P2

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.00 [%]	1000.00 [%]	10.00 [%]
CU240E-2_PN_F			

**Description:** Sets the minimum current for encoderless actual value sensing referred to 1 A (i.e. 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.

For synchronous motors, the following condition must be fulfilled:  
|p0305 x p9783| >= p9388 x 1.2

**Recommend.:** If required, the correct value of the motor minimum current should be determined by making the appropriate measurements.

**Dependency:** Refer to: r9785

## 2 Parameters

### 2.2 List of parameters

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.  
If this percentage value is reduced excessively, then this can result in a safety message and an inaccurate actual value.

<b>p9389 SI Motion actual value sensing sensorless accel. limit (P2) / ActVal sl a_lim P2</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	10.00 [%]	3300.00 [%]	100.00 [%]
CU240E-2_PN_F			
<b>Description:</b>	Sets the acceleration limit to filter velocity fluctuations. If this percentage value is increased, when accelerating, velocity peaks that do not reflect the real velocity characteristic can occur. If this value is decreased, and this dampens the velocity peaks when accelerating. - The value must be increased if C30711 with message value 1043 has occurred. - The value must be lowered if acceleration procedures have led to an excessive Safety actual velocity.		
<b>Recommend.:</b>	The setting of this parameter depends on the motor and closed-loop control, and must be newly determined for each configuration. To do this, a measurement should be performed while the actual value jumps, and the limit in r9785[0] must be set so low using p9389, so that it is exceeded by the value in r9785[1] a maximum of four times per second. The actual value correction filter intervenes at this instant in time. The step is no longer so drastic.		
<b>Dependency:</b>	Refer to: r9784		
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.		

<b>r9398[0...1] SI Motion actual checksum SI parameters (processor 2) / SI Mtn act CRC P2</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	-
CU240E-2_PN_F			
<b>Description:</b>	Displays the checksum over the checked Safety Integrated parameters of the motion monitoring functions (actual checksum) on processor 2.		
<b>Index:</b>	[0] = Checksum over SI parameters for motion monitoring [1] = Checksum over SI parameters with hardware reference		
<b>Dependency:</b>	Refer to: p9399		

<b>p9399[0...1] SI Motion setpoint checksum SI parameters (processor 2) / SI Mtn setp CRC P2</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0000 hex	FFFF FFFF hex	0000 hex
CU240E-2_PN_F			
<b>Description:</b>	Sets the checksum over the checked Safety Integrated parameters of the motion monitoring functions (actual checksum) on processor 2.		
<b>Index:</b>	[0] = Checksum over SI parameters for motion monitoring [1] = Checksum over SI parameters with hardware reference		
<b>Dependency:</b>	Refer to: r9398		

<b>p9400</b>	<b>Safely remove memory card / Mem_card rem</b>		
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	100	0
<b>Description:</b>	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.		
<b>Value:</b>	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		
<b>Dependency:</b>	Refer to: r9401		
<b>Notice:</b>	Removing the memory card without a request (p9400 = 2) and confirmation (p9400 = 3) may destroy the file system on the memory card. The memory card will then no longer work properly and must be replaced.		
<b>Note:</b>	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.		

<b>r9401</b>	<b>Safely remove memory card status / Mem_card rem stat</b>				
	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the status of the memory card.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Memory card inserted	Yes	No	-
	01	Memory card activated	Yes	No	-
	02	SIEMENS memory card	Yes	No	-
	03	Memory card as USB data storage medium from the PC used	Yes	No	-
<b>Dependency:</b>	Refer to: p9400				
<b>Note:</b>	Re bit 01, 00: 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 02, 00: Bit 2/0 = 0/0: No memory card inserted. Bit 2/0 = 0/1: 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.				

<b>r9406[0...19]</b>	<b>PS file parameter number parameter not transferred / PS par_no n transf</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	<p>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).</p> <p>r9406[0] = 0                      --&gt; All of the parameter values were able to be transferred error-free.</p> <p>r9406[0...x] &gt; 0                      --&gt; indicates the parameter number in the following cases:</p> <ul style="list-style-type: none"> <li>- parameter, whose value was not able to be completely accepted.</li> <li>- indexed parameter, where at least 1 index was not able to be accepted. The first index that is not transferred is displayed in r9407.</li> </ul>		
<b>Dependency:</b>	Refer to: r9407, r9408		
<b>Note:</b>	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		
<b>r9407[0...19]</b>	<b>PS file parameter index parameter not transferred / PS parameter index</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	<p>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).</p> <p>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].</p> <p>r9406[0] = 0                      --&gt; All of the parameter values were able to be transferred error-free.</p> <p>r9406[n] &gt; 0                      --&gt; Displays r9407[n] the first index of the parameter number r9406[n] that was not transferred.</p>		
<b>Dependency:</b>	Refer to: r9406, r9408		
<b>Note:</b>	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		
<b>r9408[0...19]</b>	<b>PS file fault code parameter not transferred / PS fault code</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Only for internal Siemens service purposes.		
<b>Dependency:</b>	Refer to: r9406, r9407		
<b>Note:</b>	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		

<b>r9409</b>	<b>Number of parameters to be saved / Qty par to save</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the number of modified parameters and those that have still not be saved for this drive object.		
<b>Dependency:</b>	Refer to: p0971		
<b>Notice:</b>	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.		
<b>Note:</b>	The modified parameters that still need to be saved are internally listed in r9410 ... r9419.		
<b>r9451[0...29]</b>	<b>Units changeover adapted parameters / Unit_chngov par</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the parameters whose parameter would have to be changed during a units changeover.		
<b>r9463</b>	<b>Actual macro / Actual macro</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	999999	-
<b>Description:</b>	Displays the set valid macro.		
<b>Note:</b>	A value of 0 is displayed if a parameter set by a macro is changed.		
<b>p9484</b>	<b>BICO interconnections search signal source / BICO S_src srch</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	4294967295	0
<b>Description:</b>	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).		
<b>Dependency:</b>	Refer to: r9485, r9486		
<b>r9485</b>	<b>BICO interconnections signal source search count / BICO S_src srchQty</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the number of BICO interconnections to the signal sink being searched for.		
<b>Dependency:</b>	Refer to: p9484, r9486		

## 2 Parameters

### 2.2 List of parameters

**Note:** The signal source to be searched is set in p9484 (BICO-coded).  
The search result is contained in r9482 and r9483 and is specified by the count (r9485) and the first index (r9486).

<b>r9486</b>		<b>BICO interconnections signal source search first index / BICO S_src srchldx</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	-	
<b>Description:</b>	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).			
<b>Dependency:</b>	Refer to: p9484, r9485			
<b>Note:</b>	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).			

<b>p9501</b>		<b>SI Motion enable safety functions (processor 1) / SI Mtn enable P1</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_PN_F	-	-	0000 0000 0000 0000 0000 0000 0000 0000 0000 bin		
<b>Description:</b>	Sets the enable signals for the safe motion monitoring.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Enable SI Motion	Enable	Inhibit	-
	16	Enable SSM hysteresis and filtering	Enable	Inhibit	2823
	17	Enable SDI	Enable	Inhibit	2824
	30	Enable F-DI in PROFIsafe telegram	Enable	Inhibit	-
<b>Note:</b>	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)				

<b>p9501</b>		<b>SI Motion enable safety functions (processor 1) / SI Mtn enable P1</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 0000 0000 0000 0000 0000 0000 0000 0000 bin		
<b>Description:</b>	Sets the enable signals for the safe motion monitoring.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	Enable SI Motion	Enable	Inhibit	-
	17	Enable SDI	Enable	Inhibit	2824
<b>Note:</b>	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)				



<b>p9506 SI Motion function specification (processor 1) / SI Mtn fct_spc P1</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	1	3	1
CU240E-2_PN_F			
<b>Description:</b>	Sets the function specification for the safe motion monitoring.		
<b>Value:</b>	1: Safety without encoder with braking ramp (SBR) 3: Safety without encoder with accel_monitoring(SAM) / delay time		

<b>p9507 SI Motion function configuration (processor 1) / SI Mtn config P1</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	0011 bin
CU240E-2_PN_F			
<b>Description:</b>	Sets the function configuration for safe motion monitoring.		
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b> <b>0 signal</b> <b>FP</b>
	00	Extended message acknowledgement	Yes      No      -
	01	Setpoint velocity limit for STOP F	No      Yes      -
<b>Note:</b>	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.		

<b>p9509 SI Motion behavior during pulse suppression (processor 1) / SI Mtn behav IL P1</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	-	-	0000 0000 1111 1111 bin
<b>Description:</b>	Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.		
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b> <b>0 signal</b> <b>FP</b>
	00	SSM during pulse suppression and sensorless	Becomes inactive      Remains active      -
	08	SDI during pulse suppression and sensorless	Becomes inactive      Remains active      -
<b>Notice:</b>	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.		
<b>Note:</b>	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.		

## 2 Parameters

### 2.2 List of parameters

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.

---

#### p9509 SI Motion behavior during pulse suppression (processor 1) / SI Mtn behav IL P1

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0000 0000 1111 1111 bin

**Description:** Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	08	SDI during pulse suppression and sensorless	Becomes inactive	Remains active	-

**Notice:** 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.

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#### p9521[0...7] SI Motion gearbox motor/load denominator (processor 1) / SI Mtn gear den P1

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	1	2147000000	1
CU240E-2_PN_F			

**Description:** Sets the denominator for the gearbox between the motor and the load.

**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: p9522

**Notice:** It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.

<b>p9522[0...7] SI Motion gearbox motor/load numerator (processor 1) / SI Mtn gear num P1</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	1	2147000000	1
CU240E-2_PN_F			
<b>Description:</b>	Sets the numerator for the gearbox between the motor and the load.		
<b>Index:</b>	[0] = Gearbox 1 [1] = Gearbox 2 [2] = Gearbox 3 [3] = Gearbox 4 [4] = Gearbox 5 [5] = Gearbox 6 [6] = Gearbox 7 [7] = Gearbox 8		
<b>Dependency:</b>	Refer to: p9521		
<b>Notice:</b>	It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.		
<b>Note:</b>	In the case of encoderless monitoring functions, the pole pair number must be multiplied by the numerator of the gearbox ratio. Example: Gearbox ratio 1:4, pole pair number (r0313) = 2 --> p9521 = 1, p9522 = 8 (4 x 2)		
<b>p9531[0...3] SI Motion SLS limit values (processor 1) / SI Mtn SLS lim P1</b>			
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.01 [rpm]	100000.00 [rpm]	2000.00 [rpm]
<b>Description:</b>	Sets the limit values for the function "Safely-Limited Speed" (SLS).		
<b>Index:</b>	[0] = Limit value SLS1 [1] = Limit value SLS2 [2] = Limit value SLS3 [3] = Limit value SLS4		
<b>Dependency:</b>	Refer to: p9563		
<b>Note:</b>	SLS: Safely-Limited Speed		
<b>p9533 SI Motion SLS setpoint speed limit (processor 1) / SI Mtn SLS set_lim</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.000 [%]	100.000 [%]	80.000 [%]
CU240E-2_PN_F			
<b>Description:</b>	This is an evaluation factor to define the setpoint limit from the selected actual speed limit. The active SLS limit value is evaluated with this factor and is made available as setpoint limit in r9733.		
<b>Dependency:</b>	This parameter only has to be parameterized for the motion monitoring functions integrated in the drive (p9601.2 = 1) r9733[0] = p9531[x] x p9533 (converted from the load side to the motor side) r9733[1] = - p9531[x] x p9533 (converted from the load side to the motor side) [x] = Selected SLS stage Conversion factor from the motor side to the load side: - motor type = rotary and axis type = linear: p9522 / (p9521 x p9520) - otherwise: p9522 / p9521 Refer to: p9501, p9531, p9601		

## 2 Parameters

### 2.2 List of parameters

**Note:** The active actual speed limit is selected via PROFIsafe.  
With STOP A, B, setpoint 0 is specified in r9733.  
For p9533 = 0, the setpoint speed limit is de-activated and r9733[0] is set to p1082 and r9733[1] is set to -p1082.  
SLS: Safely-Limited Speed

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#### **p9542 SI Motion act. val. comparison tolerance (crossw.) (processor 1) / SI Mtn act tol P1**

CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0010 [°]	360.0000 [°]	12.0000 [°]

**Description:** Sets the tolerance for the crosswise data comparison of the actual position between processors 1 and 2.

**Note:** For a linear axis, the tolerance is internally limited to 10 mm.

For a "linear axis with rotating motor" and factory setting of p9520, p9521 and p9522, the factory setting of p9542 corresponds to a position tolerance of 36 ° on the motor side.

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#### **p9545 SI Motion SSM filter time (processor 1) / SI Mtn SSM filt P1**

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2823
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	0.00 [ms]	100.00 [ms]	0.00 [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.

The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle.

SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

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#### **p9546 SI Motion SSM velocity limit (processor 1) / SI Mtn SSM v\_limP1**

CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2823
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	100000.00 [rpm]	20.00 [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)

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#### **p9547 SI Motion SSM velocity hysteresis (processor 1) / SI Mtn SSM hyst P1**

CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_PN_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2823
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.0010 [rpm]	500.0000 [rpm]	10.0000 [rpm]

**Description:** Sets the velocity hysteresis for the SSM feedback signal to detect standstill ( $n < nx$ ).

**Note:** The velocity hysteresis is effective only if the function is enabled (p9501.16 = 1).

The parameter is included in the crosswise data comparison of the two monitoring channels.

SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

<b>p9548</b>	<b>SI Motion SAM actual velocity tolerance (processor 1) / SI mtn SAM tol P1</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	120000.00 [rpm]	300.00 [rpm]
<b>Description:</b>	Sets the velocity tolerance for the "SAM" function.		
<b>Note:</b>	SAM: Safe Acceleration Monitor (safe acceleration monitoring)		
<b>p9551</b>	<b>SI Motion SLS changeover delay time (processor 1) / SI Mtn SLS t P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2819, 2820
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.00 [ms]	600000.00 [ms]	100.00 [ms]
CU240E-2_PN_F			
<b>Description:</b>	Sets the delay time for the SLS changeover for the function "safely limited speed" (SLS). When transitioning from a higher to a lower safely-limited velocity/speed stage, within this delay time, the "old" velocity stage remains active. Even if SLS is activated from the state "SLS in active", then this delay is still applied.		
<b>Note:</b>	SLS: Safely-Limited Speed		
<b>p9556</b>	<b>SI Motion pulse suppression delay time (processor 1) / SI Mtn IL t_del P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2819
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.00 [ms]	3600000.00 [ms]	600000.00 [ms]
CU240E-2_PN_F			
<b>Description:</b>	Sets the delay time for STOP A after STOP B.		
<b>Dependency:</b>	Refer to: p9560		
<b>Note:</b>	The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle.		
<b>p9558</b>	<b>SI Motion acceptance test mode time limit (processor 1) / SI Mtn acc t P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	5000.00 [ms]	100000.00 [ms]	40000.00 [ms]
CU240E-2_PN_F			
<b>Description:</b>	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.		
<b>Note:</b>	The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle.		
<b>p9559</b>	<b>SI Motion forced checking procedure timer (processor 1) / SI Mtn dyn timer</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.00 [h]	9000.00 [h]	8.00 [h]
CU240E-2_PN_F			
<b>Description:</b>	Sets the time interval for carrying out the forced checking procedure and testing the safety motion monitoring functions integrated in the drives.		

## 2 Parameters

### 2.2 List of parameters

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

**Note:**

STO: Safe Torque Off

#### **p9560 SI Motion pulse suppression shutdown speed (processor 1) / SI Mtn IL v\_sh P1**

CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	10.00 [rpm]	6000.00 [rpm]	10.00 [rpm]

**Description:**

Sets the shutdown speed for the pulse suppression.

Below this speed "standstill" is assumed and for STOP B / SS1, the pulses are suppressed (by changing to STOP A).

**Dependency:**

Refer to: p9556

**Note:**

The shutdown speed has no effect for a value = 0.

SS1: Safe Stop 1

#### **p9563[0...3] SI Motion SLS-specific stop response (processor 1) / SI Mtn SLS stop P1**

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	1	0
CU240E-2_PN_F			

**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 SLS4

**Dependency:**

Refer to: p9531

**Note:**

SLS: Safely-Limited Speed

#### **p9564 SI Motion SDI tolerance (processor 1) / SI Mtn SDI tol P1**

CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2824
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.001 [°]	360.000 [°]	12.000 [°]

**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

**Note:**

SDI: Safe Direction (safe motion direction)

<b>p9565</b>	<b>SI Motion SDI delay time (processor 1) / SI Mtn SDI t P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2824
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.00 [ms]	600000.00 [ms]	100.00 [ms]
CU240E-2_PN_F			
<b>Description:</b>	Sets the delay time for the function "Safe motion direction" (SDI). After selecting the SDI function, then for a maximum of this time, motion in the monitored direction is permissible. This time can therefore be used for braking any motion.		
<b>Dependency:</b>	Refer to: p9564, p9566		
<b>Note:</b>	The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle. SDI: Safe Direction (safe motion direction)		
<b>p9566</b>	<b>SI Motion SDI stop response (processor 1) / SI Mtn SDI Stop P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2824
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	1	1
CU240E-2_PN_F			
<b>Description:</b>	Sets the stop response for the function "Safe motion direction" (SDI). This setting applies to both directions of motion.		
<b>Value:</b>	0: STOP A 1: STOP B		
<b>Dependency:</b>	Refer to: p9564, p9565		
<b>Note:</b>	SDI: Safe Direction (safe motion direction)		
<b>p9568</b>	<b>SI Motion SAM velocity limit (processor 1) / SI Mtn SAM v_limP1</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00 [rpm]	1000.00 [rpm]	0.00 [rpm]
<b>Description:</b>	Sets the velocity tolerance limit for the "SAM" function. SAM is de-activated once the set velocity limit has been undershot.		
<b>Note:</b>	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.		
<b>p9570</b>	<b>SI Motion acceptance test mode (processor 1) / SI Mtn acc_mod P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0000 hex	00AC hex	0000 hex
CU240E-2_PN_F			
<b>Description:</b>	Setting to select and de-select the acceptance test mode.		
<b>Value:</b>	0: [00 hex] De-select the acceptance test mode 172: [AC hex] Select the acceptance test mode		
<b>Dependency:</b>	Refer to: p9558, r9571, p9601		
<b>Note:</b>	Acceptance test mode can only be selected if the motion monitoring functions, which are integrated in the drives, are enabled (p9601.2/p9801.2).		

## 2 Parameters

### 2.2 List of parameters

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<b>p9571</b>	<b>SI Motion acceptance test status (processor 1) / SI Mtn acc_status</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0000 hex	00AC hex	-
CU240E-2_PN_F			
<b>Description:</b>	Displays the status of the acceptance test mode.		
<b>Value:</b>	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 p9570 15: [0F hex] Acc_mode not possible due to expired Acc_timer 172: [AC hex] Acc_mode active		
<b>Dependency:</b>	Refer to: p9558, p9570		

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<b>p9581</b>	<b>SI Motion brake ramp reference value (processor 1) / SI Mtn ramp ref P1</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	600.0000 [rpm]	240000.0000 [rpm]	1500.0000 [rpm]
<b>Description:</b>	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).		
<b>Dependency:</b>	Refer to: p9582, p9583		

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<b>p9582</b>	<b>SI Motion brake ramp delay time (processor 1) / SI Mtn ramp t P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	10.00 [ms]	99000.00 [ms]	250.00 [ms]
CU240E-2_PN_F			
<b>Description:</b>	Sets the delay time for monitoring the brake ramp. Monitoring of the brake ramp starts once the delay time has elapsed.		
<b>Dependency:</b>	Refer to: p9581, p9583		
<b>Note:</b>	The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle. Internally, the set time is limited downwards to 2 safety monitoring clock cycles (2 * 12 ms).		

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<b>p9583</b>	<b>SI Motion brake ramp monitoring time (processor 1) / SI Mtn rp t_mon P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.50 [s]	3600.00 [s]	10.00 [s]
CU240E-2_PN_F			
<b>Description:</b>	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).		
<b>Dependency:</b>	Refer to: p9581, p9582		
<b>Note:</b>	The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle.		



<b>p9585</b>		<b>SI Motion actual value sensing sensorless fault tolerance (CU) / ActVal sl tol CU</b>	
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-1	4	-1
CU240E-2_PN_F			
<b>Description:</b>	Sets the tolerance of the plausibility monitoring of the current and voltage angle. A higher value results in a higher degree of ruggedness when reversing at low speeds, as well as in the field weakening range for load steps. An increase is advantageous, if the current or voltage at the motor become small.		
<b>Dependency:</b>	Refer to: r9787		
<b>Notice:</b>	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 and a higher velocity deviation (r9787).		
<b>Note:</b>	This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3). For synchronous motors, the value 4 must be set. If value = -1: - for synchronous motors, the calculation is automatically made with the value 4. - for induction motors, the calculation is automatically made with a value of 0 (if the code number of the power unit p0201[0] < 14000, otherwise with a value of 2).		

<b>p9586</b>		<b>SI Motion actual value sensing sensorless delay time (P1) / ActVal sl t_del P1</b>	
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	5.00 [ms]	1000.00 [ms]	100.00 [ms]
CU240E-2_PN_F			
<b>Description:</b>	Sets the delay time to evaluate the encoderless actual value sensing after the pulses have been enabled. The value must be greater than or equal to the motor magnetizing time (p0346).		
<b>Caution:</b>	The safety functionality is only completely guaranteed after this time has expired.		
			
<b>Notice:</b>	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.		
<b>Note:</b>	This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3). The set time is rounded internally to an integer multiple of the monitoring clock (p9500/p9300) cycle.		

<b>p9587</b>		<b>SI Motion actual value sensing sensorless filter time (P1) / Actv sl t_filt P1</b>	
PM240	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.00 [ms]	100.00 [ms]	25.00 [ms]
CU240E-2_PN_F			
<b>Description:</b>	Sets the filter time for smoothing the actual value with sensorless actual value sensing.		
<b>Notice:</b>	A longer filter time results in a longer response time.		

<b>p9588</b>		<b>SI Motion actual value sensing sensorless minimum current (P1) / ActVal sl I_min P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_F	0.00 [%]	1000.00 [%]	10.00 [%]	
CU240E-2_PN_F				
<b>Description:</b>	Sets the minimum current for encoderless actual value sensing referred to 1 A (i.e. 1 % = 10 mA).			
	- The value must be increased if C01711 has occurred with message value 1042.			
	- The value must be decreased if C01711 has occurred with message value 1041.			
	For synchronous motors, the following condition must be fulfilled:  p0305 x p9783  >= p9588 x 1.2			
<b>Recommend.:</b>	If required, the correct value of the motor minimum current should be determined by making the appropriate measurements.			
<b>Dependency:</b>	Refer to: r9785			
<b>Notice:</b>	If this percentage value is reduced excessively, then this can result in a safety message and an inaccurate actual value.			

<b>p9589</b>		<b>SI Motion actual value sensing sensorless accel. limit (P1) / ActVal sl a_lim P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_F	10.00 [%]	3300.00 [%]	100.00 [%]	
CU240E-2_PN_F				
<b>Description:</b>	Sets the acceleration limit to filter velocity fluctuations.			
	If this percentage value is increased, when accelerating, velocity peaks that do not reflect the real velocity characteristic can occur.			
	If this value is decreased, and this dampens the velocity peaks when accelerating.			
	- 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.			
<b>Recommend.:</b>	The setting of this parameter depends on the motor and closed-loop control, and must be newly determined for each configuration.			
	To do this, a measurement should be performed while the actual value jumps, and the limit in r9785[0] must be set so low using p9589, so that it is exceeded by the value in r9785[1] a maximum of four times per second. The actual value correction filter intervenes at this instant in time. The step is no longer so drastic.			
<b>Dependency:</b>	Refer to: r9784			

<b>r9590[0...3]</b>		<b>SI Motion version safety motion monitoring (processor 1) / SI Mtn version P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_F	-	-	-	
CU240E-2_PN_F				
<b>Description:</b>	Displays the Safety Integrated version for the safe monitoring functions.			
<b>Index:</b>	[0] = Safety Version (major release) [1] = Safety Version (minor release) [2] = Safety Version (baselevel or patch) [3] = Safety Version (hotfix)			
<b>Dependency:</b>	Refer to: r9770			
<b>Note:</b>	Example: r9590[0] = 2, r9590[1] = 60, r9590[2] = 1, r9590[3] = 0 --> SI Motion version V02.60.01.00			

<b>p9601 SI enable functions integrated in the drive (processor 1) / SI enable fct P1</b>				
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32	
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	0000 bin	
<b>Description:</b>	Sets the enable signals for the safety functions integrated in the drive and the type of selection on processor 1. Not all of the settings listed below will be permissible, depending on the Control Unit and Power Module being used: 0000 hex: Safety functions integrated in the drive inhibited (no safety function). 0001 hex: Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1). 0004 hex: Extended functions are enabled via onboard terminals (permissible for r9771.5 = 1). 0008 hex: Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1). 0009 hex: Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1). 000C hex: Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1). 000D hex: Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9771.4 = 1).			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	Enable STO via terminals (processor 1)	Enable	Inhibit
<b>Dependency:</b>	Refer to: r9771, p9801			
<b>Note:</b>	A change only becomes effective after a POWER ON. STO: Safe Torque Off			

<b>p9601 SI enable functions integrated in the drive (processor 1) / SI enable fct P1</b>				
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32	
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_PN_F	-	-	0000 bin	
<b>Description:</b>	Sets the enable signals for the safety functions integrated in the drive and the type of selection on processor 1. Not all of the settings listed below will be permissible, depending on the Control Unit and Power Module being used: 0000 hex: Safety functions integrated in the drive inhibited (no safety function). 0001 hex: Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1). 0004 hex: Extended functions are enabled via onboard terminals (permissible for r9771.5 = 1). 0008 hex: Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1). 0009 hex: Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1). 000C hex: Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1). 000D hex: Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9771.4 = 1).			

## 2 Parameters

### 2.2 List of parameters

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Enable STO via terminals (processor 1)	Enable	Inhibit	2810
	02	Enable drive_integr motion_monitoring functions (processor 1)	Enable	Inhibit	-
	03	Enable PROFIsafe (processor 1)	Enable	Inhibit	-

**Dependency:** Refer to: r9771, p9801

**Note:** A change only becomes effective after a POWER ON.  
STO: Safe Torque Off

<b>p9601</b>		<b>SI enable functions integrated in the drive (processor 1) / SI enable fct P1</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
CU240E-2_DP	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2 PN	-	-	0000 bin		

**Description:** Sets the enable signals for the safety functions integrated in the drive and the type of selection on processor 1. Not all of the settings listed below will be permissible, depending on the Control Unit and Power Module being used:

0000 hex:  
Safety functions integrated in the drive inhibited (no safety function).

0001 hex:  
Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1).

0004 hex:  
Extended functions are enabled via onboard terminals (permissible for r9771.5 = 1).

0008 hex:  
Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1).

0009 hex:  
Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1).

000C hex:  
Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1).

000D hex:  
Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9771.4 = 1).

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Enable STO via terminals (processor 1)	Enable	Inhibit	2810
	03	Enable PROFIsafe (processor 1)	Enable	Inhibit	-

**Dependency:** Refer to: r9771, p9801

**Note:** A change only becomes effective after a POWER ON.  
STO: Safe Torque Off

<b>p9601</b>		<b>SI enable functions integrated in the drive (processor 1) / SI enable fct P1</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	0000 bin		

**Description:** Sets the enable signals for the safety functions integrated in the drive and the type of selection on processor 1. Not all of the settings listed below will be permissible, depending on the Control Unit and Power Module being used:

0000 hex:  
Safety functions integrated in the drive inhibited (no safety function).

0001 hex:  
Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1).

0004 hex:  
Extended functions are enabled via onboard terminals (permissible for r9771.5 = 1).

0008 hex:  
Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1).

0009 hex:

Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1).

000C hex:

Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1).

000D hex:

Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9771.4 = 1).

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Enable STO via terminals (processor 1)	Enable	Inhibit	2810
	02	Enable drive_integr motion_monitoring functions (processor 1)	Enable	Inhibit	-

**Dependency:** Refer to: r9771, p9801

**Note:** A change only becomes effective after a POWER ON.  
STO: Safe Torque Off

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### p9610 SI PROFIsafe address (processor 1) / SI PROFIsafe P1

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP_F	0000 hex	FFFE hex	0000 hex
CU240E-2_PN_F			
CU240E-2 PN			

**Description:** Sets the PROFIsafe address for processor 1.

**Dependency:** Refer to: p9810

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### p9650 SI F-DI changeover discrepancy time (processor 1) / SI F-DI chg t P1

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2810
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	0.00 [ms]	2000.00 [ms]	500.00 [ms]
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			

**Description:** Sets the discrepancy time for the changeover of the failsafe digital input for STO on processor 1.  
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 discrepancy time.

**Dependency:** Refer to: p9850

**Note:** For a crosswise data comparison between p9650 and p9850, a difference of one Safety monitoring clock cycle is tolerated.

The parameterized time is rounded internally to an integer multiple of the monitoring clock cycle.

F-DI: Failsafe Digital Input

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<b>p9651</b>	<b>SI STO debounce time (processor 1) / SI STO t_debou P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	0.00 [ms]	100.00 [ms]	1.00 [ms]
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			

**Description:** Sets the debounce time for the failsafe digital inputs used to control the "STO" function. The debounce time is rounded to whole milliseconds.

**Note:** The debounce time is rounded to whole milliseconds. It specifies the maximum duration of a fault pulse at the fail-safe digital inputs with no reaction/influence on the selection or deselection of the Safety Basic Functions.

Example:  
 Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.  
 Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

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<b>p9659</b>	<b>SI forced checking procedure timer / SI FCP Timer</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2810
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	0.00 [h]	9000.00 [h]	8.00 [h]
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			

**Description:** Sets the time interval for carrying out the forced checking procedure and testing the Safety shutdown paths. Within the parameterized time, STO must have been de-selected at least once. The monitoring time is reset each time that STO is de-selected.

**Note:** STO: Safe Torque Off

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<b>r9660</b>	<b>SI forced checking procedure remaining time / SI frc chk remain</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	- [h]	- [h]	- [h]
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			

**Description:** Displays the time remaining before dynamization and testing of the safety shutdown paths (forced checking procedure).

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<b>r9670</b>	<b>SI module identification Control Unit / Module ID CU</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	4294967295	-

**Description:** CRC via Node Identifier of the Control Unit.

**Note:** CU: Control Unit

<b>r9672</b>	<b>SI module identifier Power Module / Module ID PM</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	4294967295	-
<b>Description:</b>	CRC via the Node Identifier of a Power Module.		
<b>Note:</b>	PM: Power Module		
<b>p9700</b>	<b>SI copy function / SI copy function</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	0000 hex	00D0 hex	0000 hex
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	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.		
<b>Value:</b>	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		
<b>Dependency:</b>	Refer to: r3996		
<b>Notice:</b>	When the parameters are copied, short-term communication interruptions may occur.		
<b>Note:</b>	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, p9651 --> p9851		
<b>p9701</b>	<b>Acknowledge SI data change / Ackn SI data</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95), U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	0000 hex	00EC hex	0000 hex
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	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.		
<b>Value:</b>	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		
<b>Dependency:</b>	Refer to: r9398, p9399, r9728, p9729, r9798, p9799, r9898, p9899		
<b>Note:</b>	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.		

<b>p9705</b>	<b>BI: SI Motion: Test stop signal source / SI Mtn test stop</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2837
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	0
CU240E-2_PN_F	-	-	-

**Description:** Sets the signal source for the test stop of the safety-relevant motion monitoring functions.  
**Notice:** Before setting the signal source in p9705 it must be ensured that the signal source is at a logical 0. If, in the Safety commissioning mode, the signal source in p9705 is set - and it already has a logical 1 - then a test stop is immediately initiated and the messages C01711/C30711 are output with message value 1005.

<b>r9708[0...5]</b>	<b>SI Motion diagnostics safe position / SI mtn safe pos</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
CU240E-2_F	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2822, 2836
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [°]	- [°]	- [°]

**Description:** Displays the actual load-side actual values of both monitoring channels and their difference.  
**Index:**  
 [0] = Load-side actual value on the CU  
 [1] = Load-side actual value on the second channel  
 [2] = Load-side actual value difference CU - second channel  
 [3] = Load-side max. actual value difference CU - second channel  
 [4] = Load-side actual value as safe position via PROFIsafe  
 [5] = Load-side additional actual value difference CU - second channel  
**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

<b>r9710[0...1]</b>	<b>SI Motion diagnostics result list 1 / SI Mtn res_list 1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	-
CU240E-2_PN_F	-	-	-

**Description:** Displays result list 1 that, for the crosswise data comparison between the monitoring channels, led to the fault.  
**Index:**  
 [0] = Result list processor 2  
 [1] = Result list processor 1

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	06	Actual value > upper limit SLS1	Yes	No	-
	07	Actual value > lower limit SLS1	Yes	No	-
	08	Actual value > upper limit SLS2	Yes	No	-



09	Actual value > lower limit SLS2	Yes	No	-
10	Actual value > upper limit SLS3	Yes	No	-
11	Actual value > lower limit SLS3	Yes	No	-
12	Actual value > upper limit SLS4	Yes	No	-
13	Actual value > lower limit SLS4	Yes	No	-
16	Actual value > upper limit SAM/SBR	Yes	No	-
17	Actual value > lower limit SAM/SBR	Yes	No	-
18	Actual value > upper limit SDI positive	Yes	No	-
19	Actual value > lower limit SDI positive	Yes	No	-
20	Actual value > upper limit SDI negative	Yes	No	-
21	Actual value > lower limit SDI negative	Yes	No	-

**Note:** SAM: Safe Acceleration Monitor (safe acceleration monitoring)  
SBR: Safe Brake Ramp (safe brake ramp monitoring)  
SLS: Safely-Limited Speed

### r9712 CO: SI Motion diagnostics pos. act. val. motor side (processor 1) / SI Mtn s\_act motP1

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	-
CU240E-2_PN_F	-	-	-

**Description:** Displays the actual motor-side position actual value for the motion monitoring functions on processor 1.

**Note:** The display is updated in the safety monitoring clock cycle.

### r9713[0...5] CO: SI Motion diagnostics position actual value load side / SI Mtn s\_act load

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	-
CU240E-2_PN_F	-	-	-

**Description:** Displays the actual load-side actual values of both monitoring channels and their difference.

**Index:**  
[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  
[5] = Load-side additional actual value difference CU - second channel

**Dependency:** Refer to: r9708, r9724

**Note:** The value of this parameter is displayed in r9708 with units (mm or degrees).

The display is updated in the safety monitoring clock cycle.

Re index 0:

The display of the load-side position actual value on 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

## 2 Parameters

### 2.2 List of parameters

<b>r9714[0...2]</b>	<b>CO: SI Motion diagnostics velocity (processor 1) / SI Mtn diag v P1</b>				
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32		
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_F	- [rpm]	- [rpm]	- [rpm]		
CU240E-2_PN_F					
<b>Description:</b>	Displays the actual velocity values for the motion monitoring functions on processor 1.				
<b>Index:</b>	[0] = Load-side velocity actual value on processor 1 [1] = Actual SAM/SBR velocity limit on processor 1 [2] = Actual SLS velocity limit on the processor 1				
<b>Dependency:</b>	Refer to: r9732				
<b>Notice:</b>	Re index 2: This SLS velocity limit can, as a result of conversion into the internal monitoring format, deviate from the specified SLS velocity limit (see r9732).				
<b>Note:</b>	The display is updated in the safety monitoring clock cycle.				
<b>r9720.0...13</b>	<b>CO/BO: SI Motion control signals integrated in the drive / SI Mtn integ STW</b>				
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2840, 2855		
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_F	-	-	-		
CU240E-2_PN_F					
<b>Description:</b>	Control signals for safety-relevant motion monitoring functions integrated in the drive.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	De-select STO	Yes	No	-
	01	De-select SS1	Yes	No	-
	04	De-select SLS	Yes	No	-
	07	Acknowledgement	Signal edge active	No	-
	09	Select SLS bit 0	Set	Not set	-
	10	Select SLS bit 1	Set	Not set	-
	12	Deselect SDI positive	Yes	No	2824
	13	Deselect SDI negative	Yes	No	2824
<b>Note:</b>	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.				
<b>r9722.0...15</b>	<b>CO/BO: SI Motion drive-integrated status signals (processor 1) / SI Mtn int stat P1</b>				
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2840, 2855		
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_PN_F	-	-	-		
<b>Description:</b>	Status signal for safety-relevant motion monitoring functions integrated in the drive on monitoring channel 1.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	STO or safe pulse cancellation active	Yes	No	-
	01	SS1 active	Yes	No	-
	04	SLS active	Yes	No	-
	07	Internal event	No	Yes	-
	09	Active SLS stage bit 0	Set	Not set	-
	10	Active SLS stage bit 1	Set	Not set	-
	12	SDI pos active	Yes	No	2824
	13	SDI neg active	Yes	No	2824
	15	SSM (speed below limit value)	Yes	No	2823

- 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 the value is equal to zero.

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**r9722.0...13 CO/BO: SI Motion drive-integrated status signals (processor 1) / SI Mtn int stat P1**

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2840, 2855
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Status signal for safety-relevant motion monitoring functions integrated in the drive on monitoring channel 1.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	STO or safe pulse cancellation active	Yes	No	-
	01	SS1 active	Yes	No	-
	04	SLS active	Yes	No	-
	07	Internal event	No	Yes	-
	09	Active SLS stage bit 0	Set	Not set	-
	10	Active SLS stage bit 1	Set	Not set	-
	12	SDI pos active	Yes	No	2824
	13	SDI neg active	Yes	No	2824

- 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 the value is equal to zero.

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**r9723.0...16 CO/BO: SI Motion diagnostic signals integrated in the drive / SI Mtn integ diag**

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	-
CU240E-2_PN_F			

**Description:** Displays the diagnostic signals for safety-relevant motion monitoring functions integrated in the drive.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Forced checking procedure required	Yes	No	-
	01	STOP F and then STOP B active	Yes	No	2819
	02	Communication failure	Yes	No	-
	03	Actual value sensing supplies valid value	Yes	No	2821
	04	Encoderless act val sensing acc to technique for U/f control	Yes	No	-
	09	Safe pulse cancellation active	Yes	No	-
	12	Test stop active	Yes	No	-
	16	SAM/SBR active	Yes	No	2820

- Note:** Re bit 01:  
This bit can be used to execute a control-based ESR.  
ESR: Extended Stop and Retract  
SAM: Safe Acceleration Monitor (safe acceleration monitoring)  
SBR: Safe Brake Ramp (safe brake ramp monitoring)

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<b>r9724</b>	<b>SI Motion crosswise comparison clock cycle / SI Mtn CDC clk cyc</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	- [ms]	- [ms]	- [ms]
CU240E-2_PN_F			
<b>Description:</b>	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.		
<b>Note:</b>	CDC: Crosswise Data Comparison		

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<b>r9725[0...2]</b>	<b>SI Motion diagnostics STOP F / SI Mtn Diag STOP F</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	-
CU240E-2_PN_F			
<b>Description:</b>	Re index 0: 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 >= 1000: Additional diagnostic values of the drive. Re index 1: Displays the value from processor 1 that resulted in the STOP F. Re index 2: Displays the value from processor 2 that resulted in the STOP F.		
<b>Index:</b>	[0] = Message value for CDC [1] = Processor 1 CDC actual value [2] = Processor 2 CDC actual value		
<b>Note:</b>	The significance of the individual message values is described in message C01711. CDC: Crosswise Data Comparison Re Index 1, 2: When Safety message C01711 with message value >= 1000 occurs, these indices are not supplied with values.		

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<b>r9728[0...2]</b>	<b>SI Motion actual checksum SI parameters (processor 1) / SI Mtn act CRC P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	-
CU240E-2_PN_F			
<b>Description:</b>	Displays the checksum over the checked Safety Integrated parameters of the motion monitoring functions (actual checksum).		
<b>Index:</b>	[0] = Checksum over SI parameters for motion monitoring [1] = Checksum over SI parameters for actual values [2] = Checksum over SI parameters for hardware		
<b>Dependency:</b>	Refer to: p9729		

<b>p9729[0...2]</b>		<b>SI Motion setpoint checksum SI parameters (processor 1) / SI Mtn setp CRC P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32	
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_F	0000 hex	FFFF FFFF hex	0000 hex	
CU240E-2_PN_F				
<b>Description:</b>	Sets the checksum using the checksum-tested Safety Integrated parameters for motion monitoring functions (reference checksum).			
<b>Index:</b>	[0] = Checksum over SI parameters for motion monitoring [1] = Checksum over SI parameters for actual values [2] = Checksum over SI parameters for hardware			
<b>Dependency:</b>	Refer to: r9728			
<b>r9732[0...1]</b>		<b>SI Motion velocity resolution / SI Mtn v_res</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
CU240E-2_F	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
CU240E-2_PN_F	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	- [rpm]	- [rpm]	- [rpm]	
<b>Description:</b>	Displays the velocity resolution for safety-relevant motion monitoring functions. Re index 0: Displays the safe velocity resolution (load side). Setpoints for velocity limits or parameter changes for velocities below this threshold have no effect. Re index 1: Displays the safe velocity accuracy based on the safe encoder accuracy			
<b>Index:</b>	[0] = Actual velocity resolution [1] = Minimum velocity resolution			
<b>Note:</b>	Index 0: 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.  Index 1: For a two-encoder system, with just non-safety capable encoders, this means the poorer value of the two encoders. Index[1] takes into account the coarse resolution of the encoder only			
<b>r9733[0...2]</b>		<b>CO: SI Motion setpoint speed limit effective / SI Mtn setp_lim</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> p2000	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> 3_1	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> 2820, 2824, 3630	
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_F	- [rpm]	- [rpm]	- [rpm]	
CU240E-2_PN_F				
<b>Description:</b>	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.			
<b>Recommend.:</b>	For the ramp-function generator, by appropriately interconnecting the speed limits p1051 and p1052 with r9733[0, 1], a drive-based setpoint velocity limiting can be realized. - CI: p1051 = r9733[0] - CI: p1052 = r9733[1] Additional limiting can also be activated using connector input p1085 and p1088.			
<b>Index:</b>	[0] = Setpoint limiting positive [1] = Setpoint limiting negative [2] = Setpoint limit absolute			

## 2 Parameters

### 2.2 List of parameters

- 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  $r9722$ .

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<b>r9734.0...14</b>	<b>CO/BO: SI Safety Info Channel status word S_ZSW1B / SIC S_ZSW1B</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Display and BICO output for status word S\_ZSW1B of the safety information channel.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	STO active	Yes	No	-
	07	Internal event	Yes	No	-
	14	ESR retract requested	Yes	No	-

**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.

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<b>r9734.0...14</b>	<b>CO/BO: SI Safety Info Channel status word S_ZSW1B / SIC S_ZSW1B</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	-
CU240E-2_PN_F	-	-	-

**Description:** Display and BICO output for status word S\_ZSW1B of the safety information channel.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	STO active	Yes	No	-
	01	SS1 active	Yes	No	-
	04	SLS active	Yes	No	-
	06	SLS selected	Yes	No	-
	07	Internal event	Yes	No	-
	09	Select SLS bit0	Yes	No	-
	10	Select SLS bit1	Yes	No	-
	12	SDI positive selected	Yes	No	-
	13	SDI neg selected	Yes	No	-
	14	ESR retract requested	Yes	No	-

**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.

<b>r9742.0...15</b>		<b>CO/BO: SI Motion drive-integrated status signals (processor 2) / SI Mtn int stat P2</b>			
PM240	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2840, 2855		
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_PN_F	-	-	-		
<b>Description:</b>	Status signal for safety-relevant motion monitoring functions integrated in the drive.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	STO or safe pulse cancellation active	Yes	No	-
	01	SS1 active	Yes	No	-
	04	SLS active	Yes	No	-
	07	Internal event	No	Yes	-
	09	Active SLS stage bit 0	Set	Not set	-
	10	Active SLS stage bit 1	Set	Not set	-
	12	SDI pos active	Yes	No	-
	13	SDI neg active	Yes	No	-
	15	SSM (speed below limit value)	Yes	No	2823
<b>Notice:</b>	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.				
<b>Note:</b>	This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions the value is equal to zero.				

<b>r9742.0...15</b>		<b>CO/BO: SI Motion drive-integrated status signals (processor 2) / SI Mtn int stat P2</b>			
PM240	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2840, 2855		
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Status signal for safety-relevant motion monitoring functions integrated in the drive.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	STO or safe pulse cancellation active	Yes	No	-
	01	SS1 active	Yes	No	-
	04	SLS active	Yes	No	-
	07	Internal event	No	Yes	-
	09	Active SLS stage bit 0	Set	Not set	-
	10	Active SLS stage bit 1	Set	Not set	-
	15	SSM (speed below limit value)	Yes	No	2823
<b>Notice:</b>	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.				
<b>Note:</b>	This parameter is only supplied with actual values if SI Motion functions are active. For Safety Integrated Basic Functions the value is equal to zero.				

<b>p9761</b>		<b>SI password input / SI password inp</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> C, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2800		
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_DP	0000 hex	FFFF FFFF hex	0000 hex		
CU240E-2_DP_F					
CU240E-2_F					
CU240E-2_PN_F					
CU240E-2_PN					
<b>Description:</b>	Enters the Safety Integrated password.				
<b>Note:</b>	It is not possible to change Safety Integrated parameters until the Safety Integrated password has been entered.				

## 2 Parameters

### 2.2 List of parameters

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<b>p9762</b>	<b>SI password new / SI password new</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2800
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	0000 hex	FFFF FFFF hex	0000 hex
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	Enters a new Safety Integrated password.		
<b>Dependency:</b>	A change made to the Safety Integrated password must be acknowledged in the following parameter: Refer to: p9763		

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<b>p9763</b>	<b>SI password acknowledgement / SI ackn password</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2800
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	0000 hex	FFFF FFFF hex	0000 hex
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	Acknowledges the new Safety Integrated password.		
<b>Dependency:</b>	Refer to: p9762		
<b>Note:</b>	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.		

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<b>r9765</b>	<b>SI Motion forced checking procedure remaining time (processor 1) / SI Mtn dyn rem P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	- [h]	- [h]	- [h]
CU240E-2_PN_F			
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p9705		

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<b>r9768[0...7]</b>	<b>SI PROFIsafe receive control words (processor 1) / SI Ps PZD recv P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP_F	-	-	-
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	Displays the received PROFIsafe telegram on processor 1.		
<b>Index:</b>	[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: r9769

**Note:**

The PROFIsafe trailer at the end of the telegram is also displayed (2 words).

**r9769[0...7]****SI PROFIsafe send status words (processor 1) / SI Ps PZD send P1**

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP_F	-	-	-
CU240E-2_PN_F	-	-	-
CU240E-2 PN	-	-	-

**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:**

The PROFIsafe trailer at the end of the telegram is also displayed (2 words).

**r9770[0...3]****SI version drive-integrated safety function (processor 1) / SI version Drv P1**

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2802
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	-	-	-
CU240E-2_DP_F	-	-	-
CU240E-2_F	-	-	-
CU240E-2_PN_F	-	-	-
CU240E-2 PN	-	-	-

**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 --&gt; Safety version V02.60.01.00

**r9771****SI common functions (processor 1) / SI general fct P1**

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2804
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-	-

**Description:**

Displays the supported Safety Integrated monitoring functions.

Processor 1 determines this display.

**Bit field:**

Bit	Signal name	1 signal	0 signal	FP
00	STO supported via terminals	Yes	No	2804

## 2 Parameters

### 2.2 List of parameters

**Dependency:** Refer to: r9871  
**Note:** STO: Safe Torque Off

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<b>r9771</b>	<b>SI common functions (processor 1) / SI general fct P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2804
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	-	-	-

**Description:** Displays the supported Safety Integrated monitoring functions.  
 Processor 1 determines this display.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	STO supported via terminals	Yes	No	2804
	02	Extended Functions supported (p9501 > 0)	Yes	No	2804
	04	Extended Functions PROFIsafe supported	Yes	No	-
	05	Extended Functions integrated in drive supported (p9601.2 = 1)	Yes	No	-
	06	Basic Functions PROFIsafe supported	Yes	No	-
	07	Extended Functions encoderless supported	Yes	No	-
	11	Extended Functions SDI supported	Yes	No	-
	12	Extended Functions SSM encoderless supported	Yes	No	-

**Dependency:** Refer to: r9871  
**Note:** STO: Safe Torque Off

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<b>r9771</b>	<b>SI common functions (processor 1) / SI general fct P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2804
CU240E-2_DP	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN	-	-	-

**Description:** Displays the supported Safety Integrated monitoring functions.  
 Processor 1 determines this display.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	STO supported via terminals	Yes	No	2804
	06	Basic Functions PROFIsafe supported	Yes	No	-

**Dependency:** Refer to: r9871  
**Note:** STO: Safe Torque Off

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<b>r9771</b>	<b>SI common functions (processor 1) / SI general fct P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2804
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Displays the supported Safety Integrated monitoring functions.  
 Processor 1 determines this display.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	STO supported via terminals	Yes	No	2804
	02	Extended Functions supported (p9501 > 0)	Yes	No	2804
	05	Extended Functions integrated in drive supported (p9601.2 = 1)	Yes	No	-
	07	Extended Functions encoderless supported	Yes	No	-
	11	Extended Functions SDI supported	Yes	No	-
	12	Extended Functions SSM encoderless supported	Yes	No	-

**Dependency:** Refer to: r9871  
**Note:** STO: Safe Torque Off

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**r9772.0...21 CO/BO: SI status (processor 1) / SI status P1**

PM240	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2804
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	-	-	-
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			

**Description:** Displays the Safety Integrated status on processor 1.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	STO selected on processor 1	Yes	No	2810
	01	STO active on processor 1	Yes	No	2810
	07	STO terminal state on processor 1 (Basic Functions)	High	Low	-
	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	Yes	No	-
	20	STO cause selection PROFIsafe or TM54F (Basic Functions)	Yes	No	-
	21	STO cause selection on the other monitoring channel	Yes	No	-

**Dependency:** Refer to: r9872

**Note:** Re bit 00:  
When STO is selected, the cause is displayed in bits 16 ... 21.  
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.

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**r9773.0...31 CO/BO: SI status (processor 1 + processor 2) / SI status P1+P2**

PM240	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2804
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	-	-	-
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			

**Description:** Displays the Safety Integrated status on the drive (processor 1 + processor 2).

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	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.

## 2 Parameters

### 2.2 List of parameters

<b>r9776</b>	<b>SI diagnostics / SI diag</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32	
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_DP	-	-	-	
CU240E-2_DP_F				
CU240E-2_F				
CU240E-2_PN_F				
CU240E-2 PN				
<b>Description:</b>	The parameter is used for diagnostics.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	Safety parameter changed POWER ON required	Yes	No
	01	Safety functions enabled	Yes	No
	02	Safety component replaced and data save required	Yes	No
<b>Note:</b>	Re bit 00 = 1: At least one Safety parameter has been changed that will only take effect after a POWER ON. Re bit 01 = 1: Safety functions (basic functions or extended functions) have been enabled and are active. Re bit 02 = 1: A safety-relevant component has been replaced. Data save required (p0977 = 1 or p0971 = 1 or "copy RAM to ROM").			
<b>r9780</b>	<b>SI monitoring clock cycle (processor 1) / SI mon_clk cyc P1</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2802	
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_DP	- [ms]	- [ms]	-	
CU240E-2_DP_F				
CU240E-2_F				
CU240E-2_PN_F				
CU240E-2 PN				
<b>Description:</b>	Displays the clock cycle time for the Safety Integrated Basic Functions on processor 1.			
<b>Note:</b>	Information regarding the relationship between monitoring clock cycle and response times can be found in the following references: - SINAMICS G120 Function Manual Safety Integrated - technical documentation for the particular product			
<b>r9781[0...1]</b>	<b>SI checksum to check changes (processor 1) / SI chg chksm P1</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32	
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2_DP	-	-	-	
CU240E-2_DP_F				
CU240E-2_F				
CU240E-2_PN_F				
CU240E-2 PN				
<b>Description:</b>	Displays the checksum for tracking changes for Safety Integrated. These are additional checksums that are created to track changes (fingerprint for the "safety logbook" functionality) to safety parameters (that are relevant for checksums).			

**Index:** [0] = SI checksum to track functional changes  
[1] = SI checksum to track hardware-specific changes

**Dependency:** Refer to: p9601, p9729, p9799

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### r9782[0...1] SI time stamp to check changes (processor 1) / SI chg t P1

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	- [h]	- [h]	- [h]
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			

**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

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### r9784[0...1] SI Motion diagnostics sensorless acceleration / Diag sl a

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	- [rev/s <sup>2</sup> ]	- [rev/s <sup>2</sup> ]	- [rev/s <sup>2</sup> ]
CU240E-2_PN_F			

**Description:** Display to diagnose acceleration values of the encoderless actual values sensing.

**Index:** [0] = Setpoint acceleration value  
[1] = Actual acceleration value

**Dependency:** Refer to: p9589

**Note:** Re index 0:  
Shows the parameterized acceleration value of p9589.  
Re index 1:  
Shows the actually measured acceleration values of the encoderless actual value sensing

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### r9785[0...1] SI Motion diagnostics sensorless minimum current / Diag sl I\_min

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> 6_3	<b>Unit selection:</b> p0505	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	- [mA]	- [mA]	- [mA]
CU240E-2_PN_F			

**Description:** Display to diagnose currents of the encoderless actual value sensing.

**Index:** [0] = Minimum current parameterized  
[1] = Minimum current measured

**Dependency:** Refer to: p9588

**Note:** Re index 0:  
Displays the parameterized minimum current of p9588.  
Re index 1:  
Displays the currently measured current of the encoderless actual value sensing

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<b>r9786[0...2]</b>	<b>SI Motion diagnostics sensorless angle / Diag sl angle</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	- [°]	- [°]	- [°]
CU240E-2_PN_F			
<b>Description:</b>	Display to diagnose the angle for sensorless actual value sensing.		
<b>Index:</b>	[0] = Plausibility angle actual value [1] = Voltage angle actual value [2] = Current angle actual value		
<b>Dependency:</b>	Refer to: p9585		
<b>Note:</b>	Re index 0: Displays the actual plausibility angle. Re index 1: Displays the actual voltage angle. Re index 2: Displays the actual current angle.		

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<b>r9787</b>	<b>SI Motion diagnostics sensorless velocity deviation / Diag sl v_dev</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	- [rpm]	- [rpm]	- [rpm]
CU240E-2_PN_F			
<b>Description:</b>	Displays the actual velocity deviation for sensorless actual value sensing. This value is calculated when setting p9585/p9385. The actual velocity has a deviation of +/- r9787 for 6 ms * p9585/p9385 within a monitoring time of 1 s.		
<b>Dependency:</b>	Refer to: p9585		
<b>Note:</b>	For linear axes, the following unit applies: millimeters per minute For rotary axes, the following unit applies: revolutions per minute		

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<b>r9794[0...19]</b>	<b>SI crosswise comparison list (processor 1) / SI CDC_list P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2802
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	-	-	-
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	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.		
<b>Note:</b>	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.		

<b>r9795</b>	<b>SI diagnostics STOP F (processor 1) / SI diag STOP F P1</b>		
PM240	<b>Access level:</b> 2	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2802
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	-	-	-
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	Displays the number of the cross-compared data item which caused STOP F on processor 1.		
<b>Note:</b>	A complete list of numbers for crosswise-compared data items appears in fault F01611.		
<b>r9798</b>	<b>SI actual checksum SI parameters (processor 1) / SI act chksm P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2800
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	-	-	-
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	Displays the checksum for the Safety Integrated parameters checked using checksums on processor 1 (actual checksum).		
<b>Dependency:</b>	Refer to: p9799, r9898		
<b>p9799</b>	<b>SI setpoint checksum SI parameters (processor 1) / SI setp_chksm P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2800
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	0000 hex	FFFF FFFF hex	0000 hex
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	Sets the checksum for the Safety Integrated parameters checked using checksums on processor 1 (setpoint checksum).		
<b>Dependency:</b>	Refer to: r9798, p9899		
<b>p9801</b>	<b>SI enable functions integrated in the drive (processor 2) / SI enable fct P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0000 bin
<b>Description:</b>	Sets the enable signals for the safety functions integrated in the drive and the type of selection on processor 1. Not all of the settings listed below will be permissible, depending on the Control Unit and Power Module being used: 0000 hex: Safety functions integrated in the drive inhibited (no safety function). 0001 hex: Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1).		

## 2 Parameters

### 2.2 List of parameters

0004 hex:

Extended functions are enabled via onboard terminals (permissible for r9771.5 = 1).

0008 hex:

Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1).

0009 hex:

Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1).

000C hex:

Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1).

000D hex:

Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9771.4 = 1).

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Enable STO via terminals (processor 2)	Enable	Inhibit	2810

**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.

STO: Safe Torque Off

#### p9801 SI enable functions integrated in the drive (processor 2) / SI enable fct P2

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	-	-	0000 bin

**Description:** Sets the enable signals for the safety functions integrated in the drive and the type of selection on processor 1. Not all of the settings listed below will be permissible, depending on the Control Unit and Power Module being used:

0000 hex:

Safety functions integrated in the drive inhibited (no safety function).

0001 hex:

Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1).

0004 hex:

Extended functions are enabled via onboard terminals (permissible for r9771.5 = 1).

0008 hex:

Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1).

0009 hex:

Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1).

000C hex:

Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1).

000D hex:

Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9771.4 = 1).

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Enable STO via terminals (processor 2)	Enable	Inhibit	2810
	02	Enable drive_integr motion_monitoring functions (processor 2)	Enable	Inhibit	-
	03	Enable PROFIsafe (processor 2)	Enable	Inhibit	-

**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.

STO: Safe Torque Off



<b>p9801 SI enable functions integrated in the drive (processor 2) / SI enable fct P2</b>				
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2_DP	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
CU240E-2 PN	-	-	0000 bin	
<b>Description:</b>	Sets the enable signals for the safety functions integrated in the drive and the type of selection on processor 1. Not all of the settings listed below will be permissible, depending on the Control Unit and Power Module being used: 0000 hex: Safety functions integrated in the drive inhibited (no safety function). 0001 hex: Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1). 0004 hex: Extended functions are enabled via onboard terminals (permissible for r9771.5 = 1). 0008 hex: Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1). 0009 hex: Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1). 000C hex: Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1). 000D hex: Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9771.4 = 1).			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	Enable STO via terminals (processor 2)	Enable	Inhibit
	03	Enable PROFIsafe (processor 2)	Enable	Inhibit
<b>Dependency:</b>	Refer to: p9601, r9871			
<b>Notice:</b>	This parameter is overwritten by the copy function of the safety functions integrated in the drive.			
<b>Note:</b>	A change only becomes effective after a POWER ON. STO: Safe Torque Off			

<b>p9801 SI enable functions integrated in the drive (processor 2) / SI enable fct P2</b>				
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16	
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -	
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	
CU240E-2_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	
	-	-	0000 bin	
<b>Description:</b>	Sets the enable signals for the safety functions integrated in the drive and the type of selection on processor 1. Not all of the settings listed below will be permissible, depending on the Control Unit and Power Module being used: 0000 hex: Safety functions integrated in the drive inhibited (no safety function). 0001 hex: Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1). 0004 hex: Extended functions are enabled via onboard terminals (permissible for r9771.5 = 1). 0008 hex: Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1). 0009 hex: Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1). 000C hex: Extended functions are enabled via PROFIsafe (permissible for r9771.4 = 1). 000D hex: Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9771.4 = 1).			

## 2 Parameters

### 2.2 List of parameters

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	Enable STO via terminals (processor 2)	Enable	Inhibit	2810
	02	Enable drive_integr motion_monitoring functions (processor 2)	Enable	Inhibit	-

**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.  
STO: Safe Torque Off

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#### p9810 SI PROFIsafe address (processor 2) / SI PROFIsafe P2

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP_F	0000 hex	FFFE hex	0000 hex
CU240E-2_PN_F			
CU240E-2 PN			

**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.

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#### p9850 SI F-DI changeover discrepancy time (processor 2) / SI F-DI chg t P2

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2810
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	0.00 [µs]	2000000.00 [µs]	500000.00 [µs]
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			

**Description:** Sets the discrepancy 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 discrepancy 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

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#### p9851 SI STO debounce time (processor 2) / SI STO t\_debou P2

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	0.00 [µs]	100000.00 [µs]	0.00 [µs]
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			

**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:** Rounding effects can occur in the last decimal place of the parameterized time.  
 The debounce time is rounded to whole milliseconds. It specifies the maximum duration of a fault pulse at the fail-safe digital inputs with no reaction/influence on the selection or deselection of the Safety Basic Functions.  
 Example:  
 Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.  
 Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

<b>r9871 SI common functions (processor 2) / SI common fct P2</b>					
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2804		
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Displays the supported Safety Integrated monitoring functions. Processor 2 determines this display.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	STO supported via terminals	Yes	No	2804
<b>Dependency:</b>	Refer to: r9771				
<b>Note:</b>	STO: Safe Torque Off				

<b>r9871 SI common functions (processor 2) / SI common fct P2</b>					
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2804		
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_PN_F	-	-	-		
<b>Description:</b>	Displays the supported Safety Integrated monitoring functions. Processor 2 determines this display.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	STO supported via terminals	Yes	No	2804
	02	Extended Functions supported (p9501 > 0)	Yes	No	2804
	04	Extended Functions PROFIsafe supported	Yes	No	-
	05	Extended Functions integrated in drive supported (p9601.2 = 1)	Yes	No	-
	06	Basic Functions PROFIsafe supported	Yes	No	-
	07	Extended Functions encoderless supported	Yes	No	-
	11	Extended Functions SDI supported	Yes	No	-
	12	Extended Functions SSM encoderless supported	Yes	No	-
<b>Dependency:</b>	Refer to: r9771				
<b>Note:</b>	STO: Safe Torque Off				

<b>r9871 SI common functions (processor 2) / SI common fct P2</b>					
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2804		
CU240E-2_DP	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_PN	-	-	-		
<b>Description:</b>	Displays the supported Safety Integrated monitoring functions. Processor 2 determines this display.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	STO supported via terminals	Yes	No	2804
	06	Basic Functions PROFIsafe supported	Yes	No	-
<b>Dependency:</b>	Refer to: r9771				
<b>Note:</b>	STO: Safe Torque Off				

## 2 Parameters

### 2.2 List of parameters

<b>r9871 SI common functions (processor 2) / SI common fct P2</b>				
PM240	<b>Access level:</b> 3		<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -		<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -		<b>Unit selection:</b> -	<b>Func. diagram:</b> 2804
CU240E-2_F	<b>Min</b>		<b>Max</b>	<b>Factory setting</b>
	-		-	-
<b>Description:</b>	Displays the supported Safety Integrated monitoring functions. Processor 2 determines this display.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	STO supported via terminals	Yes	No
	02	Extended Functions supported (p9501 > 0)	Yes	No
	05	Extended Functions integrated in drive supported (p9601.2 = 1)	Yes	No
	07	Extended Functions encoderless supported	Yes	No
	11	Extended Functions SDI supported	Yes	No
	12	Extended Functions SSM encoderless supported	Yes	No
				<b>FP</b>
				2804
				2804
				-
				-
				-
<b>Dependency:</b>	Refer to: r9771			
<b>Note:</b>	STO: Safe Torque Off			

<b>r9872.0...21 CO/BO: SI status (processor 2) / SI Status P2</b>				
PM240	<b>Access level:</b> 2		<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -		<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -		<b>Unit selection:</b> -	<b>Func. diagram:</b> 2804
CU240E-2	<b>Min</b>		<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	-		-	-
CU240E-2_DP_F				
CU240E-2_F				
CU240E-2_PN_F				
CU240E-2 PN				
<b>Description:</b>	Displays the Safety Integrated status on processor 2.			
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>
	00	STO selected on processor 2	Yes	No
	01	STO active on processor 2	Yes	No
	07	STO terminal state on processor 2 (Basic Functions)	High	Low
	09	STOP A cannot be acknowledged active	Yes	No
	10	STOP A active	Yes	No
	15	STOP F active	Yes	No
	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
	20	STO cause selection PROFIsafe or TM54F (Basic Functions)	Yes	No
	21	STO cause selection on the other monitoring channel	Yes	No
				<b>FP</b>
				2810
				2810
				-
				2802
				2802
				2802
				-
				-
				-
<b>Dependency:</b>	Refer to: r9772			
<b>Note:</b>	Re bit 00: When STO is selected, the cause is displayed in bits 16 ... 21. Re bit 18: When the bit is set, STO is selected via PROFIsafe.			

<b>r9898</b>	<b>SI actual checksum SI parameters (processor 2) / SI act_chksm P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2800
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	-	-	-
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	Displays the checksum for the Safety Integrated parameters checked using checksums on processor 2 (actual checksum).		
<b>Dependency:</b>	Refer to: r9798, p9899		
<b>p9899</b>	<b>SI setpoint checksum SI parameters (processor 2) / SI setp_chksm P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2800
CU240E-2	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_DP	0000 hex	FFFF FFFF hex	0000 hex
CU240E-2_DP_F			
CU240E-2_F			
CU240E-2_PN_F			
CU240E-2 PN			
<b>Description:</b>	Sets the checksum for the Safety Integrated parameters checked using checksums on processor 2 (setpoint checksum).		
<b>Dependency:</b>	Refer to: p9799, r9898		
<b>r9925[0...99]</b>	<b>Firmware file incorrect / FW file incorr</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Displays the directory and name of the file whose status as shipped from the factory was identified as impermissible.		
<b>Dependency:</b>	Refer to: r9926		
<b>Note:</b>	The directory and name of the file is displayed in the ASCII code.		
<b>r9926</b>	<b>Firmware check status / FW check status</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: r9925		

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<b>p9930[0...8]</b>	<b>System logbook activation / SYSLOG activation</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	0
<b>Description:</b>	Only for service purposes.		
<b>Index:</b>	[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)		
<b>Notice:</b>	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.		

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<b>p9931[0...179]</b>	<b>System logbook module selection / SYSLOG mod select.</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0000 hex	FFFF FFFF hex	0000 hex
<b>Description:</b>	Only for service purposes.		

---

<b>p9932</b>	<b>Save system logbook EEPROM / SYSLOG EEPROM save</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
	<b>Can be changed:</b> U, T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	255	0
<b>Description:</b>	Only for service purposes.		

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<b>r9935.0</b>	<b>BO: POWER ON delay signal / POWER ON t_delay</b>				
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8		
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
	-	-	-		
<b>Description:</b>	Display and binector output for a delay after POWER ON. After power-on, binector output r9935.0 is set with the start of the first sampling time and is again reset after approx. 100 ms.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	POWER ON delay signal	High	Low	-

---

<b>r9975[0...7]</b>	<b>System utilization measured / Sys util meas</b>		
	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [%]	- [%]	- [%]
<b>Description:</b>	Displays the measured system utilization. The higher the value displayed, the higher the system utilization.		

<b>Index:</b>	[0] = Computing time utilization (min) [1] = Computing time utilization (averaged) [2] = Computing time utilization (max) [3] = Largest total utilization (min) [4] = Largest total utilization (averaged) [5] = Largest total utilization (max) [6] = Reserved [7] = Reserved
<b>Dependency:</b>	Refer to: r9976
<b>Note:</b>	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).

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<b>r9976[0...7]</b>	<b>System utilization / Sys util</b>															
	<table> <tr> <td><b>Access level:</b> 3</td> <td><b>Calculated:</b> -</td> <td><b>Data type:</b> FloatingPoint32</td> </tr> <tr> <td><b>Can be changed:</b> -</td> <td><b>Scaling:</b> -</td> <td><b>Dyn. index:</b> -</td> </tr> <tr> <td><b>Units group:</b> -</td> <td><b>Unit selection:</b> -</td> <td><b>Func. diagram:</b> -</td> </tr> <tr> <td><b>Min</b></td> <td><b>Max</b></td> <td><b>Factory setting</b></td> </tr> <tr> <td>- [%]</td> <td>- [%]</td> <td>- [%]</td> </tr> </table>	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	- [%]	- [%]	- [%]
<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32														
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -														
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -														
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>														
- [%]	- [%]	- [%]														
<b>Description:</b>	Displays the system utilization. If the utilization is greater than 100%, fault F01054 is output.															
<b>Index:</b>	[0] = Reserved [1] = Computing time utilization [2] = Reserved [3] = Reserved [4] = Reserved [5] = Largest total utilization [6] = Reserved [7] = Reserved															
<b>Note:</b>	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).															

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<b>r9999[0...99]</b>	<b>Software error internal supplementary diagnostics / SW_err int diag</b>															
	<table> <tr> <td><b>Access level:</b> 4</td> <td><b>Calculated:</b> -</td> <td><b>Data type:</b> Unsigned32</td> </tr> <tr> <td><b>Can be changed:</b> -</td> <td><b>Scaling:</b> -</td> <td><b>Dyn. index:</b> -</td> </tr> <tr> <td><b>Units group:</b> -</td> <td><b>Unit selection:</b> -</td> <td><b>Func. diagram:</b> -</td> </tr> <tr> <td><b>Min</b></td> <td><b>Max</b></td> <td><b>Factory setting</b></td> </tr> <tr> <td>-</td> <td>-</td> <td>-</td> </tr> </table>	<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>	-	-	-
<b>Access level:</b> 4	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32														
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -														
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -														
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>														
-	-	-														
<b>Description:</b>	Diagnostics parameter to display additional information for internal software errors.															
<b>Note:</b>	Only for internal Siemens troubleshooting.															

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<b>p10002</b>	<b>SI Motion F-DI changeover discrepancy time (processor 1) / SI Mtn DI chg t P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	1.00 [ms]	2000.00 [ms]	500.00 [ms]
CU240E-2_PN_F			
<b>Description:</b>	Sets the discrepancy time for digital inputs. The signal states at the two associated digital inputs (F-DI) must assume the same state within this discrepancy time.		

## 2 Parameters

### 2.2 List of parameters

**Dependency:** Refer to: p10102

---

#### **p10006 SI Motion acknowledgement internal event F-DI (processor 1) / SI Mtn ackn int P1**

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	255	0
CU240E-2_PN_F			

**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

**Note:** The values "static active" and "static inactive" result in an inactive function of the safe acknowledgment.  
F-DI: Failsafe Digital Input

---

#### **p10017 SI Motion digital inputs debounce time (processor 1) / SI DI t\_debounceP1**

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.00 [ms]	100.00 [ms]	1.00 [ms]
CU240E-2_PN_F			

**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 5 (DI 5, read back input for the forced checking procedure).

**Dependency:** Refer to: p10117

**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 r10051.

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#### **p10022 SI Motion STO input terminal (processor 1) / SI Mtn STO F-DI P1**

PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	255	0
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 inactive

**Dependency:** Refer to: p10122

**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

---

<b>p10023</b>	<b>SI Motion SS1 input terminal (processor 1) / SI Mtn SS1 F-DI P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	255	0
CU240E-2_PN_F			
<b>Description:</b>	Sets the fail-safe digital input (F-DI) for the "SS1" function.		
<b>Value:</b>	0: Statically active 1: F-DI 0 2: F-DI 1 3: F-DI 2 255: Statically inact		
<b>Dependency:</b>	Refer to: p10123		
<b>Note:</b>	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		

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<b>p10026</b>	<b>SI Motion SLS input terminal (processor 1) / SI Mtn SLS F-DI P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	255	0
CU240E-2_PN_F			
<b>Description:</b>	Sets the fail-safe digital input (F-DI) for the "SLS" function.		
<b>Value:</b>	0: Statically active 1: F-DI 0 2: F-DI 1 3: F-DI 2 255: Statically inact		
<b>Dependency:</b>	Refer to: p10126		
<b>Note:</b>	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: Safely-Limited Speed		

---

<b>p10030</b>	<b>SI Motion SDI positive input terminal (processor 1) / SI SDI pos F-DI P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	255	0
CU240E-2_PN_F			
<b>Description:</b>	Sets the fail-safe digital input (F-DI) for the "SDI positive" function.		

## 2 Parameters

### 2.2 List of parameters

**Value:**  
 0: Statically active  
 1: F-DI 0  
 2: F-DI 1  
 3: F-DI 2  
 255: Statically inactive

**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)

---

<b>p10031</b>	<b>SI Motion SDI negative input terminal (processor 1) / SI SDI neg F-DI P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	255	0
CU240E-2_PN_F			

**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 inactive

**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)

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<b>r10049</b>	<b>SI Motion F-DI monitoring status (processor 1) / SI F-DI status P1</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	-
CU240E-2_PN_F			

**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.

<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	F-DI 0	Safety monitored	Freely available	-
	01	F-DI 1	Safety monitored	Freely available	-
	02	F-DI 2	Safety monitored	Freely available	-

**Dependency:**  
 p10006 / p10106  
 p10022 / p10122  
 p10023 / p10123  
 p10026 / p10126  
 p10030 / p10130  
 p10031 / p10131  
 p10050 / p10150  
 Refer to: r10149

<b>p10050</b>		<b>SI Motion PROFIsafe F-DI transfer (processor 1) / SI Ps F-DI tran P1</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_PN_F	-	-	0000 bin		
<b>Description:</b>	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.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	F-DI 0 processor 1	Transfer	No transfer	-
	01	F-DI 1 processor 1	Transfer	No transfer	-
	02	F-DI 2 processor 1	Transfer	No transfer	-
<b>Dependency:</b>	Refer to: p10150				
<b>Note:</b>	F-DI: Failsafe Digital Input				

<b>r10051.0...2</b>		<b>CO/BO: SI Motion digital inputs status (processor 1) / SI DI status P1</b>			
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32		
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -		
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -		
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>		
CU240E-2_F	-	-	-		
CU240E-2_PN_F	-	-	-		
<b>Description:</b>	Display and BICO output for 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.				
<b>Bit field:</b>	<b>Bit</b>	<b>Signal name</b>	<b>1 signal</b>	<b>0 signal</b>	<b>FP</b>
	00	F-DI 0 processor 1	High	Low	-
	01	F-DI 1 processor 1	High	Low	-
	02	F-DI 2 processor 1	High	Low	-
<b>Dependency:</b>	Refer to: p9501, p9601, p10017, p10050, r10151				
<b>Note:</b>	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.				

## 2 Parameters

### 2.2 List of parameters

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<b>p10102</b>	<b>SI Motion F-DI changeover discrepancy time (processor 2) / SI Mtn F-DI t P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2850, 2851
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	1.00 [ms]	2000.00 [ms]	500.00 [ms]
CU240E-2_PN_F			
<b>Description:</b>	Sets the discrepancy time for digital inputs. The signal states at the two associated digital inputs (F-DI) must assume the same state within this discrepancy time.		
<b>Dependency:</b>	Refer to: p10002		
<b>Note:</b>	F-DI: Failsafe Digital Input		

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<b>p10106</b>	<b>SI Motion acknowledgement internal event F-DI (processor 2) / SI ackn int evt P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	255	0
CU240E-2_PN_F			
<b>Description:</b>	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.		
<b>Value:</b>	0: Statically active 1: F-DI 0 2: F-DI 1 3: F-DI 2 255: Statically inactive		
<b>Dependency:</b>	Refer to: p10006		
<b>Note:</b>	The values "static active" and "static inactive" result in an inactive function of the safe acknowledgment. F-DI: Failsafe Digital Input		

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<b>p10117</b>	<b>SI Motion digital inputs debounce time (processor 2) / SI DI t_debounceP2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0.00 [ms]	100.00 [ms]	1.00 [ms]
CU240E-2_PN_F			
<b>Description:</b>	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.		
<b>Dependency:</b>	Refer to: p10017		
<b>Note:</b>	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.		

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<b>p10122</b>	<b>SI Motion STO input terminal (processor 2) / SI STO F-DI P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	255	0
CU240E-2_PN_F			
<b>Description:</b>	Sets the fail-safe digital input (F-DI) for the "STO" function.		
<b>Value:</b>	0: Statically active 1: F-DI 0 2: F-DI 1 3: F-DI 2 255: Statically inactive		
<b>Dependency:</b>	Refer to: p10022		
<b>Note:</b>	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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<b>p10123</b>	<b>SI Motion SS1 input terminal (processor 2) / SI SS1 F-DI P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	255	0
CU240E-2_PN_F			
<b>Description:</b>	Sets the fail-safe digital input (F-DI) for the "SS1" function.		
<b>Value:</b>	0: Statically active 1: F-DI 0 2: F-DI 1 3: F-DI 2 255: Statically inactive		
<b>Dependency:</b>	Refer to: p10023		
<b>Note:</b>	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		

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<b>p10126</b>	<b>SI Motion SLS input terminal (processor 2) / SI SLS F-DI P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	255	0
CU240E-2_PN_F			
<b>Description:</b>	Sets the fail-safe digital input (F-DI) for the "SLS" function.		
<b>Value:</b>	0: Statically active 1: F-DI 0 2: F-DI 1 3: F-DI 2 255: Statically inactive		
<b>Dependency:</b>	Refer to: p10026		

## 2 Parameters

### 2.2 List of parameters

**Note:** If value = 0:  
No terminal assigned, safety function always active.  
If value = 255:  
No terminal assigned, safety function always inactive.  
F-DI: Failsafe Digital Input  
SLS: Safely-Limited Speed

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<b>p10130</b>	<b>SI Motion SDI positive input terminal (processor 2) / SI SDI pos F-DI P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	255	0
CU240E-2_PN_F			

**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)

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<b>p10131</b>	<b>SI Motion SDI negative input terminal (processor 2) / SI SDI neg F-DI P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	0	255	0
CU240E-2_PN_F			

**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)

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<b>r10149</b>	<b>SI Motion F-DI monitoring status (processor 2) / SI F-DI status P2</b>		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	-
CU240E-2_PN_F			

**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.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	F-DI 0	Safety monitored	Freely available	-
	01	F-DI 1	Safety monitored	Freely available	-
	02	F-DI 2	Safety monitored	Freely available	-

**Dependency:** p10006 / p10106  
p10022 / p10122  
p10023 / p10123  
p10026 / p10126  
p10030 / p10130  
p10031 / p10131  
p10050 / p10150  
Refer to: r10049

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p10150	SI Motion PROFIsafe F-DI transfer (processor 2) / SI Ps F-DI tran P2		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> C(95)	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_PN_F	-	-	0000 bin

**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.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	F-DI 0 processor 2	Transfer	No transfer	-
	01	F-DI 1 processor 2	Transfer	No transfer	-
	02	F-DI 2 processor 2	Transfer	No transfer	-

**Dependency:** Refer to: p10050  
**Note:** F-DI: Failsafe Digital Input

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r10151.0...2	CO/BO: SI Motion digital inputs status (processor 2) / SI DI status P2		
PM240	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
PM250	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
PM260	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
CU240E-2_DP_F	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
CU240E-2_F	-	-	-
CU240E-2_PN_F	-	-	-

**Description:** Display and BICO output for 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.

Bit field:	Bit	Signal name	1 signal	0 signal	FP
	00	F-DI 0 processor 2	High	Low	-
	01	F-DI 1 processor 2	High	Low	-
	02	F-DI 2 processor 2	High	Low	-

**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 parameterization (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.

## 2 Parameters

### 2.2 List of parameters

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.

<b>r20001[0...9]</b>	<b>Run-time group sampling time / RTG sampling time</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	- [ms]	- [ms]	- [ms]
<b>Description:</b>	Displays the current sampling time of the run-time group 0 to 9.		
<b>Index:</b>	[0] = Run-time group 0 [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 [7] = Run-time group 7 [8] = Run-time group 8 [9] = Run-time group 9		
<b>p20030[0...3]</b>	<b>BI: AND 0 inputs / AND 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 0 of the AND function block.		
<b>Index:</b>	[0] = Input I0 [1] = Input I1 [2] = Input I2 [3] = Input I3		
<b>r20031</b>	<b>BO: AND 0 output Q / AND 0 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 0 of the AND function block.		
<b>p20032</b>	<b>AND 0 run-time group / AND 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance AND 0 of the AND function block is to be called.		
<b>Value:</b>	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

**p20033****AND 0 run sequence / AND 0 RunSeq**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	32000	10

**Description:**

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.

**p20034[0...3]****BI: AND 1 inputs / AND 1 inputs**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	0

**Description:**

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

**r20035****BO: AND 1 output Q / AND 1 output Q**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:**

Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 1 of the AND function block.

**p20036****AND 1 run-time group / AND 1 RTG**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
1	9999	9999

**Description:**

Setting parameter for the run-time group in which the instance AND 1 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

<b>p20037</b>	<b>AND 1 run sequence / AND 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	20
<b>Description:</b>	Setting parameter for the run sequence of instance AND 1 within the run-time group set in p20036.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20038[0...3]</b>	<b>BI: AND 2 inputs / AND 2 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 2 of the AND function block.		
<b>Index:</b>	[0] = Input I0 [1] = Input I1 [2] = Input I2 [3] = Input I3		
<b>r20039</b>	<b>BO: AND 2 output Q / AND 2 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 2 of the AND function block.		
<b>p20040</b>	<b>AND 2 run-time group / AND 2 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance AND 2 of the AND function block is to be called.		
<b>Value:</b>	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		
<b>p20041</b>	<b>AND 2 run sequence / AND 2 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2710
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	30
<b>Description:</b>	Setting parameter for the run sequence of instance AND 2 within the run-time group set in p20040.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

<b>p20042[0...3]</b>	<b>BI: AND 3 inputs / AND 3 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 3 of the AND function block.		
<b>Index:</b>	[0] = Input I0 [1] = Input I1 [2] = Input I2 [3] = Input I3		
<b>r20043</b>	<b>BO: AND 3 output Q / AND 3 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 3 of the AND function block.		
<b>p20044</b>	<b>AND 3 run-time group / AND 3 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance AND 3 of the AND function block is to be called.		
<b>Value:</b>	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		
<b>p20045</b>	<b>AND 3 run sequence / AND 3 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7210
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	40
<b>Description:</b>	Setting parameter for the run sequence of instance AND 3 within the run-time group set in p20044.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20046[0...3]</b>	<b>BI: OR 0 inputs / OR 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 0 of the OR function block.		
<b>Index:</b>	[0] = Input I0 [1] = Input I1		

## 2 Parameters

### 2.2 List of parameters

[2] = Input I2

[3] = Input I3

<b>r20047</b>	<b>BO: OR 0 output Q / OR 0 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity Q = I0   I1   I2   I3 of instance OR 0 of the OR function block.		
<b>p20048</b>	<b>OR 0 run-time group / OR 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance OR 0 of the OR function block is to be called.		
<b>Value:</b>	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		
<b>p20049</b>	<b>OR 0 run sequence / OR 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	60
<b>Description:</b>	Setting parameter for the run sequence of instance OR 0 within the run-time group set in p20048.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20050[0...3]</b>	<b>BI: OR 1 inputs / OR 1 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 1 of the OR function block.		
<b>Index:</b>	[0] = Input I0 [1] = Input I1 [2] = Input I2 [3] = Input I3		
<b>r20051</b>	<b>BO: OR 1 output Q / OR 1 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity Q = I0   I1   I2   I3 of instance OR 1 of the OR function block.		

<b>p20052</b>	<b>OR 1 run-time group / OR 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance OR 1 of the OR function block is to be called.		
<b>Value:</b>	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		
<b>p20053</b>	<b>OR 1 run sequence / OR 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	70
<b>Description:</b>	Setting parameter for the run sequence of instance OR 1 within the run-time group set in p20052.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20054[0...3]</b>	<b>BI: OR 2 inputs / OR 2 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 2 of the OR function block.		
<b>Index:</b>	[0] = Input I0 [1] = Input I1 [2] = Input I2 [3] = Input I3		
<b>r20055</b>	<b>BO: OR 2 output Q / OR 2 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity Q = I0   I1   I2   I3 of instance OR 2 of the OR function block.		
<b>p20056</b>	<b>OR 2 run-time group / OR 2 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance OR 2 of the OR function block is to be called.		

## 2 Parameters

### 2.2 List of parameters

<b>Value:</b>	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

---

<b>p20057</b>	<b>OR 2 run sequence / OR 2 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	80

**Description:** Setting parameter for the run sequence of instance OR 2 within the run-time group set in p20056.

**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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<b>p20058[0...3]</b>	<b>BI: OR 3 inputs / OR 3 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**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

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<b>r20059</b>	<b>BO: OR 3 output Q / OR 3 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Display parameter for binary quantity Q = I0 | I1 | I2 | I3 of instance OR 3 of the OR function block.

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<b>p20060</b>	<b>OR 3 run-time group / OR 3 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999

**Description:** Setting parameter for the run-time group in which the instance OR 3 of the OR function block is to be called.

<b>Value:</b>	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

<b>p20061</b>	<b>OR 3 run sequence / OR 3 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7212
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	90
<b>Description:</b>	Setting parameter for the run sequence of instance OR 3 within the run-time group set in p20060.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20062[0...3]</b>	<b>BI: XOR 0 inputs / XOR 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 0 of the XOR function block.		
<b>Index:</b>	[0] = Input I0 [1] = Input I1 [2] = Input I2 [3] = Input I3		
<b>r20063</b>	<b>BO: XOR 0 output Q / XOR 0 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity Q of instance XOR 0 of the XOR function block.		
<b>p20064</b>	<b>XOR 0 run-time group / XOR 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance XOR 0 of the XOR function block is to be called.		
<b>Value:</b>	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		
<b>p20065</b>	<b>XOR 0 run sequence / XOR 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	110
<b>Description:</b>	Setting parameter for the run sequence of instance XOR 0 within the run-time group set in p20064.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

<b>p20066[0...3]</b>	<b>BI: XOR 1 inputs / XOR 1 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 1 of the XOR function block.		
<b>Index:</b>	[0] = Input I0 [1] = Input I1 [2] = Input I2 [3] = Input I3		
<b>r20067</b>	<b>BO: XOR 1 output Q / XOR 1 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity Q of instance XOR 1 of the XOR function block.		
<b>p20068</b>	<b>XOR 1 run-time group / XOR 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance XOR 1 of the XOR function block is to be called.		
<b>Value:</b>	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		
<b>p20069</b>	<b>XOR 1 run sequence / XOR 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	120
<b>Description:</b>	Setting parameter for the run sequence of instance XOR 1 within the run-time group set in p20068.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20070[0...3]</b>	<b>BI: XOR 2 inputs / XOR 2 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 2 of the XOR function block.		
<b>Index:</b>	[0] = Input I0 [1] = Input I1		



[2] = Input I2

[3] = Input I3

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<b>r20071</b>	<b>BO: XOR 2 output Q / XOR 2 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Display parameter for binary quantity Q of instance XOR 2 of the XOR function block.

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<b>p20072</b>	<b>XOR 2 run-time group / XOR 2 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999

**Description:** Setting parameter for the run-time group in which the instance XOR 2 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

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<b>p20073</b>	<b>XOR 2 run sequence / XOR 2 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	130

**Description:** Setting parameter for the run sequence of instance XOR 2 within the run-time group set in p20072.

**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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<b>p20074[0...3]</b>	<b>BI: XOR 3 inputs / XOR 3 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**Description:** Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 3 of the XOR function block.

**Index:**

- [0] = Input I0
- [1] = Input I1
- [2] = Input I2
- [3] = Input I3

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<b>r20075</b>	<b>BO: XOR 3 output Q / XOR 3 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Display parameter for binary quantity Q of instance XOR 3 of the XOR function block.

<b>p20076</b>	<b>XOR 3 run-time group / XOR 3 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance XOR 3 of the XOR function block is to be called.		
<b>Value:</b>	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		
<b>p20077</b>	<b>XOR 3 run sequence / XOR 3 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7214
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	140
<b>Description:</b>	Setting parameter for the run sequence of instance XOR 3 within the run-time group set in p20076.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20078</b>	<b>BI: NOT 0 input I / NOT 0 input I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantity I of instance NOT 0 of the inverter.		
<b>r20079</b>	<b>BO: NOT 0 inverted output / NOT 0 inv output</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the inverted output of instance NOT 0 of the inverter.		
<b>p20080</b>	<b>NOT 0 run-time group / NOT 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance NOT 0 of the inverter is to be called.		
<b>Value:</b>	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

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<b>p20081</b>	<b>NOT 0 run sequence / NOT 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	160
<b>Description:</b>	Setting parameter for the run sequence of instance NOT 0 within the run-time group set in p20080.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

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<b>p20082</b>	<b>BI: NOT 1 input I / NOT 1 input I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantity I of instance NOT 1 of the inverter.		

---

<b>r20083</b>	<b>BO: NOT 1 inverted output / NOT 1 inv output</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the inverted output of instance NOT 1 of the inverter.		

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<b>p20084</b>	<b>NOT 1 run-time group / NOT 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance NOT 1 of the inverter is to be called.		
<b>Value:</b>	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		

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<b>p20085</b>	<b>NOT 1 run sequence / NOT 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	170
<b>Description:</b>	Setting parameter for the run sequence of instance NOT 1 within the run-time group set in p20084.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

## 2 Parameters

### 2.2 List of parameters

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<b>p20086</b>	<b>BI: NOT 2 input I / NOT 2 input I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantity I of instance NOT 2 of the inverter.		

---

<b>r20087</b>	<b>BO: NOT 2 inverted output / NOT 2 inv output</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the inverted output of instance NOT 2 of the inverter.		

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<b>p20088</b>	<b>NOT 2 run-time group / NOT 2 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance NOT 2 of the inverter is to be called.		
<b>Value:</b>	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		

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<b>p20089</b>	<b>NOT 2 run sequence / NOT 2 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	180
<b>Description:</b>	Setting parameter for the run sequence of instance NOT 2 within the run-time group set in p20088.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

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<b>p20090</b>	<b>BI: NOT 3 input I / NOT 3 input I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantity I of instance NOT 3 of the inverter.		

<b>r20091</b>	<b>BO: NOT 3 inverted output / NOT 3 inv output</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the inverted output of instance NOT 3 of the inverter.		
<b>p20092</b>	<b>NOT 3 run-time group / NOT 3 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance NOT 3 of the inverter is to be called.		
<b>Value:</b>	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		
<b>p20093</b>	<b>NOT 3 run sequence / NOT 3 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	190
<b>Description:</b>	Setting parameter for the run sequence of instance NOT 3 within the run-time group set in p20092.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20094[0...3]</b>	<b>CI: ADD 0 inputs / ADD 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities X0, X1, X2, X3 of instance ADD 0 of the adder.		
<b>Index:</b>	[0] = Input X0 [1] = Input X1 [2] = Input X2 [3] = Input X3		
<b>r20095</b>	<b>CO: ADD 0 output Y / ADD 0 output Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the output quantity $Y = X0 + X1 + X2 + X3$ of instance ADD 0 of the adder.		

<b>p20096</b>	<b>ADD 0 run-time group / ADD 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance ADD 0 of the adder is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20097</b>	<b>ADD 0 run sequence / ADD 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	210
<b>Description:</b>	Setting parameter for the run sequence of instance ADD 0 within the run-time group set in p20096.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20098[0...3]</b>	<b>CI: ADD 1 inputs / ADD 1 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities X0, X1, X2, X3 of instance ADD 1 of the adder.		
<b>Index:</b>	[0] = Input X0 [1] = Input X1 [2] = Input X2 [3] = Input X3		
<b>r20099</b>	<b>CO: ADD 1 output Y / ADD 1 output Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the output quantity $Y = X0 + X1 + X2 + X3$ of instance ADD 1 of the adder.		
<b>p20100</b>	<b>ADD 1 run-time group / ADD 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance ADD 1 of the adder is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		

<b>p20101</b>	<b>ADD 1 run sequence / ADD 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	220
<b>Description:</b>	Setting parameter for the run sequence of instance ADD 1 within the run-time group set in p20100.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20102[0...1]</b>	<b>CI: SUB 0 inputs / SUB 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of minuend X1 and subtrahend X2 of instance SUB 0 of the subtractor.		
<b>Index:</b>	[0] = Minuend X1 [1] = Subtrahend X2		
<b>r20103</b>	<b>CO: SUB 0 difference Y / SUB 0 difference Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the difference $Y = X1 - X2$ of instance SUB 0 of the subtractor.		
<b>p20104</b>	<b>SUB 0 run-time group / SUB 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance SUB 0 of the subtractor is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20105</b>	<b>SUB 0 run sequence / SUB 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	240
<b>Description:</b>	Setting parameter for the run sequence of instance SUB 0 within the run-time group set in p20104.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

<b>p20106[0...1]</b>	<b>CI: SUB 1 inputs / SUB 1 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of minuend X1 and subtrahend X2 of instance SUB 1 of the subtractor.		
<b>Index:</b>	[0] = Minuend X1 [1] = Subtrahend X2		
<b>r20107</b>	<b>CO: SUB 1 difference Y / SUB 1 difference Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the difference $Y = X1 - X2$ of instance SUB 1 of the subtractor.		
<b>p20108</b>	<b>SUB 1 run-time group / SUB 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance SUB 1 of the subtractor is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20109</b>	<b>SUB 1 run sequence / SUB 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	250
<b>Description:</b>	Setting parameter for the run sequence of instance SUB 1 within the run-time group set in p20108.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20110[0...3]</b>	<b>CI: MUL 0 inputs / MUL 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of the factors X0, X1, X2, X3 of instance MUL 0 of the multiplier.		
<b>Index:</b>	[0] = Factor X0 [1] = Factor X1 [2] = Factor X2 [3] = Factor X3		



<b>r20111</b>	<b>CO: MUL 0 product Y / MUL 0 product Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the product $Y = X0 * X1 * X2 * X3$ of instance MUL 0 of the multiplier.		
<b>p20112</b>	<b>MUL 0 run-time group / MUL 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance MUL 0 of the multiplier is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20113</b>	<b>MUL 0 run sequence / MUL 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	270
<b>Description:</b>	Setting parameter for the run sequence of instance MUL 0 within the run-time group set in p20112.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20114[0...3]</b>	<b>CI: MUL 1 inputs / MUL 1 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of the factors $X0, X1, X2, X3$ of instance MUL 1 of the multiplier.		
<b>Index:</b>	[0] = Factor $X0$ [1] = Factor $X1$ [2] = Factor $X2$ [3] = Factor $X3$		
<b>r20115</b>	<b>CO: MUL 1 product Y / MUL 1 product Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the product $Y = X0 * X1 * X2 * X3$ of instance MUL 1 of the multiplier.		

<b>p20116</b>	<b>MUL 1 run-time group / MUL 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance MUL 1 of the multiplier is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20117</b>	<b>MUL 1 run sequence / MUL 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	280
<b>Description:</b>	Setting parameter for the run sequence of instance MUL 1 within the run-time group set in p20116.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20118[0...1]</b>	<b>CI: DIV 0 inputs / DIV 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of dividend X1 and divisor X2 of instance DIV 0 of the divider.		
<b>Index:</b>	[0] = Dividend X0 [1] = Divisor X1		
<b>r20119[0...2]</b>	<b>CO: DIV 0 quotient / DIV 0 quotient</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for quotients $Y = X1/X2$ , integer number quotients YIN, and division remainder $MOD = (Y - YIN) \times X2$ of instance DIV 0 of the divider.		
<b>Index:</b>	[0] = Quotient Y [1] = Integer number quotient YIN [2] = Div remainder MOD		
<b>r20120</b>	<b>BO: DIV 0 divisor is zero QF / DIV 0 divisor=0 QF</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the signal QF that the divisor X2 of instance DIV 0 of the divider is zero. $X2 = 0.0 \Rightarrow QF = 1$		

<b>p20121</b>	<b>DIV 0 run-time group / DIV 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance DIV 0 of the divider is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20122</b>	<b>DIV 0 run sequence / DIV 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	300
<b>Description:</b>	Setting parameter for the run sequence of instance DIV 0 within the run-time group set in p20121.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20123[0...1]</b>	<b>CI: DIV 1 inputs / DIV 1 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of dividend X1 and divisor X2 of instance DIV 1 of the divider.		
<b>Index:</b>	[0] = Dividend X0 [1] = Divisor X1		
<b>r20124[0...2]</b>	<b>CO: DIV 1 quotient / DIV 1 quotient</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	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.		
<b>Index:</b>	[0] = Quotient Y [1] = Integer number quotient YIN [2] = Div remainder MOD		
<b>r20125</b>	<b>BO: DIV 1 divisor is zero QF / DIV 1 divisor=0 QF</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the signal QF that the divisor X2 of instance DIV 1 of the divider is zero. $X2 = 0.0 \Rightarrow QF = 1$		

<b>p20126</b>	<b>DIV 1 run-time group / DIV 1 RTG</b>	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
		<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance DIV 1 of the divider is to be called.			
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate			
<b>p20127</b>	<b>DIV 1 run sequence / DIV 1 RunSeq</b>	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
		<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7222
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		0	32000	310
<b>Description:</b>	Setting parameter for the run sequence of instance DIV 1 within the run-time group set in p20126.			
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.			
<b>p20128</b>	<b>CI: AVA 0 input X / AVA 0 input X</b>	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
		<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7224
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		-	-	0
<b>Description:</b>	Sets the signal source of the input quantity X of instance AVA 0 of the absolute value generator with sign evaluation.			
<b>r20129</b>	<b>CO: AVA 0 output Y / AVA 0 output Y</b>	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
		<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7224
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		-	-	-
<b>Description:</b>	Display parameter for output quantity Y of instance AVA 0 of the absolute value generator with sign evaluation.			
<b>r20130</b>	<b>BO: AVA 0 input negative SN / AVA 0 input neg SN</b>	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
		<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7224
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		-	-	-
<b>Description:</b>	Display parameter for signal SN that the input quantity X of instance AVA 0 of the absolute value generator with sign evaluation is negative. X < 0.0 => SN = 1			

<b>p20131</b>	<b>AVA 0 run-time group / AVA 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7224
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance AVA 0 of the absolute value generator with sign evaluation is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20132</b>	<b>AVA 0 run sequence / AVA 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7224
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	340
<b>Description:</b>	Setting parameter for the run sequence of instance AVA 0 within the run-time group set in p20131.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20133</b>	<b>CI: AVA 1 input X / AVA 1 input X</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7224
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of the input quantity X of instance AVA 1 of the absolute value generator with sign evaluation.		
<b>r20134</b>	<b>CO: AVA 1 output Y / AVA 1 output Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7224
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output quantity Y of instance AVA 1 of the absolute value generator with sign evaluation.		
<b>r20135</b>	<b>BO: AVA 1 input negative SN / AVA 1 input neg SN</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7224
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	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 => SN = 1		

<b>p20136</b>	<b>AVA 1 run-time group / AVA 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7224
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance AVA 1 of the absolute value generator with sign evaluation is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20137</b>	<b>AVA 1 run sequence / AVA 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7224
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	350
<b>Description:</b>	Setting parameter for the run sequence of instance AVA 1 within the run-time group set in p20136.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20138</b>	<b>BI: MFP 0 input pulse I / MFP 0 inp_pulse I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the input pulse I of instance MFP 0 of the pulse generator.		
<b>p20139</b>	<b>MFP 0 pulse duration in ms / MFP 0 pulse_dur ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse duration T in milliseconds of instance MFP 0 of the pulse generator.		
<b>r20140</b>	<b>BO: MFP 0 output Q / MFP 0 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance MFP 0 of the pulse generator.		

<b>p20141</b>	<b>MFP 0 run-time group / MFP 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance MFP 0 of the pulse generator is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20142</b>	<b>MFP 0 run sequence / MFP 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	370
<b>Description:</b>	Setting parameter for the run sequence of instance MFP 0 within the run-time group set in p20141.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20143</b>	<b>BI: MFP 1 input pulse I / MFP 1 inp_pulse I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the input pulse I of instance MFP 1 of the pulse generator.		
<b>p20144</b>	<b>MFP 1 pulse duration in ms / MFP 1 pulse_dur ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse duration T in milliseconds of instance MFP 1 of the pulse generator.		
<b>r20145</b>	<b>BO: MFP 1 output Q / MFP 1 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance MFP 1 of the pulse generator.		
<b>p20146</b>	<b>MFP 1 run-time group / MFP 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance MFP 1 of the pulse generator is to be called.		

## 2 Parameters

### 2.2 List of parameters

**Value:** 5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate

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**p20147**      **MFP 1 run sequence / MFP 1 RunSeq**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	32000	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.

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**p20148**      **BI: PCL 0 input pulse I / PCL 0 inp\_pulse I**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	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**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0.00	5400000.00	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**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:** Display parameter for output pulse Q of instance PCL 0 of the pulse shortener.

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**p20151**      **PCL 0 run-time group / PCL 0 RTG**

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
5	9999	9999

**Description:** Setting parameter for the run-time group in which the instance PCL 0 of the pulse shortener is to be called.  
**Value:** 5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate



<b>p20152</b>	<b>PCL 0 run sequence / PCL 0 RunSeq</b>		
	Access level: 3	Calculated: -	Data type: Unsigned16
	Can be changed: T	Scaling: -	Dyn. index: -
	Units group: -	Unit selection: -	Func. diagram: 7230
	Min	Max	Factory setting
	0	32000	400
<b>Description:</b>	Setting parameter for the run sequence of instance PCL 0 within the run-time group set in p20151.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20153</b>	<b>BI: PCL 1 input pulse I / PCL 1 inp_pulse I</b>		
	Access level: 3	Calculated: -	Data type: U32 / Binary
	Can be changed: T	Scaling: -	Dyn. index: -
	Units group: -	Unit selection: -	Func. diagram: 7230
	Min	Max	Factory setting
	-	-	0
<b>Description:</b>	Sets the signal source for the input pulse I of instance PCL 1 of the pulse shortener.		
<b>p20154</b>	<b>PCL 1 pulse duration in ms / PCL 1 pulse_dur ms</b>		
	Access level: 3	Calculated: -	Data type: FloatingPoint32
	Can be changed: T	Scaling: -	Dyn. index: -
	Units group: -	Unit selection: -	Func. diagram: 7230
	Min	Max	Factory setting
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse duration T in milliseconds of instance PCL 1 of the pulse shortener.		
<b>r20155</b>	<b>BO: PCL 1 output Q / PCL 1 output Q</b>		
	Access level: 3	Calculated: -	Data type: Unsigned32
	Can be changed: -	Scaling: -	Dyn. index: -
	Units group: -	Unit selection: -	Func. diagram: 7230
	Min	Max	Factory setting
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance PCL 1 of the pulse shortener.		
<b>p20156</b>	<b>PCL 1 run-time group / PCL 1 RTG</b>		
	Access level: 3	Calculated: -	Data type: Integer16
	Can be changed: T	Scaling: -	Dyn. index: -
	Units group: -	Unit selection: -	Func. diagram: 7230
	Min	Max	Factory setting
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance PCL 1 of the pulse shortener is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20157</b>	<b>PCL 1 run sequence / PCL 1 RunSeq</b>		
	Access level: 3	Calculated: -	Data type: Unsigned16
	Can be changed: T	Scaling: -	Dyn. index: -
	Units group: -	Unit selection: -	Func. diagram: 7230
	Min	Max	Factory setting
	0	32000	410
<b>Description:</b>	Setting parameter for the run sequence of instance PCL 1 within the run-time group set in p20156.		

## 2 Parameters

### 2.2 List of parameters

**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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<b>p20158</b>	<b>BI: PDE 0 input pulse I / PDE 0 inp_pulse I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**Description:** Sets the signal source for the input pulse I of instance PDE 0 of the closing delay device.

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<b>p20159</b>	<b>PDE 0 pulse delay time in ms / PDE 0 t_del ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00

**Description:** Setting parameter for pulse delay time T in milliseconds of instance PDE 0 of the closing delay device.

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<b>r20160</b>	<b>BO: PDE 0 output Q / PDE 0 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Display parameter for output pulse Q of instance PDE 0 of the closing delay device.

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<b>p20161</b>	<b>PDE 0 run-time group / PDE 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999

**Description:** Setting parameter for the run-time group in which instance PDE 0 of the closing delay device is to be called.

**Value:**  
5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate

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<b>p20162</b>	<b>PDE 0 run sequence / PDE 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	430

**Description:** Setting parameter for the run sequence of instance PDE 0 within the run-time group set in p20161.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

<b>p20163</b>	<b>BI: PDE 1 input pulse I / PDE 1 inp_pulse I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the input pulse I of instance PDE 1 of the closing delay device.		
<b>p20164</b>	<b>PDE 1 pulse delay time in ms / PDE 1 t_del ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse delay time T in milliseconds of instance PDE 1 of the closing delay device.		
<b>r20165</b>	<b>BO: PDE 1 output Q / PDE 1 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance PDE 1 of the closing delay device.		
<b>p20166</b>	<b>PDE 1 run-time group / PDE 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance PDE 1 of the closing delay device is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20167</b>	<b>PDE 1 run sequence / PDE 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	440
<b>Description:</b>	Setting parameter for the run sequence of instance PDE 1 within the run-time group set in p20166.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20168</b>	<b>BI: PDF 0 input pulse I / PDF 0 inp_pulse I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the input pulse I of instance PDF 0 of the breaking delay device.		

## 2 Parameters

### 2.2 List of parameters

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<b>p20169</b>	<b>PDF 0 pulse extension time in ms / PDF 0 t_ext ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse extension time T in milliseconds of instance PDF 0 of the breaking delay device.		

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<b>r20170</b>	<b>BO: PDF 0 output Q / PDF 0 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance PDF 0 of the breaking delay device.		

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<b>p20171</b>	<b>PDF 0 run-time group / PDF 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance PDF 0 of the breaking delay device is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		

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<b>p20172</b>	<b>PDF 0 run sequence / PDF 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	460
<b>Description:</b>	Setting parameter for the run sequence of instance PDF 0 within the run-time group set in p20171.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

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<b>p20173</b>	<b>BI: PDF 1 input pulse I / PDF 1 inp_pulse I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the input pulse I of instance PDF 1 of the breaking delay device.		

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<b>p20174</b>	<b>PDF 1 pulse extension time in ms / PDF 1 t_ext ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse extension time T in milliseconds of instance PDF 1 of the breaking delay device.		

<b>r20175</b>	<b>BO: PDF 1 output Q / PDF 1 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance PDF 1 of the breaking delay device.		
<b>p20176</b>	<b>PDF 1 run-time group / PDF 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance PDF 1 of the breaking delay device is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20177</b>	<b>PDF 1 run sequence / PDF 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	470
<b>Description:</b>	Setting parameter for the run sequence of instance PDF 1 within the run-time group set in p20176.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20178[0...1]</b>	<b>BI: PST 0 inputs / PST 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7234
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for input pulse I and the reset input R of instance PST 0 of the pulse extension element.		
<b>Index:</b>	[0] = Input pulse I [1] = Reset input R		
<b>p20179</b>	<b>PST 0 pulse duration in ms / PST 0 pulse_dur ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7234
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse duration T in milliseconds of instance PST 0 of the pulse extension element.		

## 2 Parameters

### 2.2 List of parameters

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<b>r20180</b>	<b>BO: PST 0 output Q / PST 0 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7234
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance PST 0 of the pulse extension element.		

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<b>p20181</b>	<b>PST 0 run-time group / PST 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7234
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance PST 0 of the pulse extension element is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		

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<b>p20182</b>	<b>PST 0 run sequence / PST 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7234
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	7999	490
<b>Description:</b>	Setting parameter for the run sequence of instance PST 0 within the run-time group set in p20181.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

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<b>p20183[0...1]</b>	<b>BI: PST 1 inputs / PST 1 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7234
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for input pulse I and the reset input R of instance PST 1 of the pulse extension element.		
<b>Index:</b>	[0] = Input pulse I [1] = Reset input R		

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<b>p20184</b>	<b>PST 1 pulse duration in ms / PST 1 pulse_dur ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7234
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse duration T in milliseconds of instance PST 1 of the pulse extension element.		

<b>r20185</b>	<b>BO: PST 1 output Q / PST 1 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7234
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance PST 1 of the pulse extension element.		
<b>p20186</b>	<b>PST 1 run-time group / PST 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7234
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance PST 1 of the pulse extension element is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20187</b>	<b>PST 1 run sequence / PST 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7234
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	7999	500
<b>Description:</b>	Setting parameter for the run sequence of instance PST 1 within the run-time group set in p20186.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20188[0...1]</b>	<b>BI: RSR 0 inputs / RSR 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for set input S and reset input R of instance RSR 0 of the RS flipflop.		
<b>Index:</b>	[0] = Set S [1] = Reset R		
<b>r20189</b>	<b>BO: RSR 0 output Q / RSR 0 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output Q of instance RSR 0 of the RS flipflop		

<b>r20190</b>	<b>BO: RSR 0 inverted output QN / RSR 0 inv outp QN</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for inverted output QN of instance RSR 0 of the RS flipflop.		
<b>p20191</b>	<b>RSR 0 run-time group / RSR 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance RSR 0 of the RS flipflop is to be called.		
<b>Value:</b>	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		
<b>p20192</b>	<b>RSR 0 run sequence / RSR 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	7999	520
<b>Description:</b>	Setting parameter for the run sequence of instance RSR 0 within the run-time group set in p20191.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20193[0...1]</b>	<b>BI: RSR 1 inputs / RSR 1 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for set input S and reset input R of instance RSR 1 of the RS flipflop.		
<b>Index:</b>	[0] = Set S [1] = Reset R		
<b>r20194</b>	<b>BO: RSR 1 output Q / RSR 1 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output Q of instance RSR 1 of the RS flipflop		



<b>r20195</b>	<b>BO: RSR 1 inverted output QN / RSR 1 inv outp QN</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for inverted output QN of instance RSR 1 of the RS flipflop.		
<b>p20196</b>	<b>RSR 1 run-time group / RSR 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance RSR 1 of the RS flipflop is to be called.		
<b>Value:</b>	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		
<b>p20197</b>	<b>RSR 1 run sequence / RSR 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	7999	530
<b>Description:</b>	Setting parameter for the run sequence of instance RSR 1 within the run-time group set in p20196.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20198[0...3]</b>	<b>BI: DFR 0 inputs / DFR 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	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.		
<b>Index:</b>	[0] = Trigger input I [1] = D input D [2] = Set S [3] = Reset R		
<b>r20199</b>	<b>BO: DFR 0 output Q / DFR 0 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output Q of instance DFR 0 of the D flipflop.		

<b>r20200</b>	<b>BO: DFR 0 inverted output QN / DFR 0 inv outp QN</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the inverted output QN of instance DFR 0 of the D flipflop.		
<b>p20201</b>	<b>DFR 0 run-time group / DFR 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance DFR 0 of the D flipflop is to be called.		
<b>Value:</b>	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		
<b>p20202</b>	<b>DFR 0 run sequence / DFR 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	550
<b>Description:</b>	Setting parameter for the run sequence of instance DFR 0 within the run-time group set in p20201.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20203[0...3]</b>	<b>BI: DFR 1 inputs / DFR 1 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	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.		
<b>Index:</b>	[0] = Trigger input I [1] = D input D [2] = Set S [3] = Reset R		
<b>r20204</b>	<b>BO: DFR 1 output Q / DFR 1 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output Q of instance DFR 1 of the D flipflop.		

<b>r20205</b>	<b>BO: DFR 1 inverted output QN / DFR 1 inv outp QN</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the inverted output QN of instance DFR 1 of the D flipflop.		
<b>p20206</b>	<b>DFR 1 run-time group / DFR 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance DFR 1 of the D flipflop is to be called.		
<b>Value:</b>	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		
<b>p20207</b>	<b>DFR 1 run sequence / DFR 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	560
<b>Description:</b>	Setting parameter for the run-time group of instance DFR 1 within the run-time group set in p20206.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20208[0...1]</b>	<b>BI: BSW 0 inputs / BSW 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities I0 and I1 of instance BSW 0 of the binary changeover switch.		
<b>Index:</b>	[0] = Input I0 [1] = Input I1		
<b>p20209</b>	<b>BI: BSW 0 switch setting I / BSW 0 sw_setting</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of the switch setting I of instance BSW 0 of the binary changeover switch.		

<b>r20210</b>	<b>BO: BSW 0 output Q / BSW 0 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output quantity Q of instance BSW 0 of the binary changeover switch.		
<b>p20211</b>	<b>BSW 0 run-time group / BSW 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance BSW 0 of the binary changeover switch is to be called.		
<b>Value:</b>	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		
<b>p20212</b>	<b>BSW 0 run sequence / BSW 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	7999	580
<b>Description:</b>	Setting parameter for the run sequence of instance BSW 0 within the run-time group set in p20211.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20213[0...1]</b>	<b>BI: BSW 1 inputs / BSW 1 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities I0 and I1 of instance BSW 1 of the binary changeover switch.		
<b>Index:</b>	[0] = Input I0 [1] = Input I1		
<b>p20214</b>	<b>BI: BSW 1 switch setting I / BSW 1 sw_setting</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of the switch setting I of instance BSW 1 of the binary changeover switch.		

<b>r20215</b>	<b>BO: BSW 1 output Q / BSW 1 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output quantity Q of instance BSW 1 of the binary changeover switch.		
<b>p20216</b>	<b>BSW 1 run-time group / BSW 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance BSW 1 of the binary changeover switch is to be called.		
<b>Value:</b>	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		
<b>p20217</b>	<b>BSW 1 run sequence / BSW 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	7999	590
<b>Description:</b>	Setting parameter for the run sequence of instance BSW 1 within the run-time group set in p20216.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20218[0...1]</b>	<b>CI: NSW 0 inputs / NSW 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities X0 and X1 of instance NSW 0 of the numeric changeover switch.		
<b>Index:</b>	[0] = Input X0 [1] = Input X1		
<b>p20219</b>	<b>BI: NSW 0 switch setting I / NSW 0 sw_setting</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of the switch setting I of instance NSW 0 of the numeric changeover switch.		

## 2 Parameters

### 2.2 List of parameters

<b>r20220</b>	<b>CO: NSW 0 output Y / NSW 0 output Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output quantity Y of instance NSW 0 of the numeric changeover switch.		
<b>p20221</b>	<b>NSW 0 run-time group / NSW 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance NSW 0 of the numeric changeover switch is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20222</b>	<b>NSW 0 run sequence / NSW 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	610
<b>Description:</b>	Setting parameter for the run sequence of instance NSW 0 within the run-time group set in p20221.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20223[0...1]</b>	<b>CI: NSW 1 inputs / NSW 1 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities X0 and X1 of instance NSW 1 of the numeric changeover switch.		
<b>Index:</b>	[0] = Input X0 [1] = Input X1		
<b>p20224</b>	<b>BI: NSW 1 switch setting I / NSW 1 sw_setting</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of the switch setting I of instance NSW 1 of the numeric changeover switch.		

<b>r20225</b>	<b>CO: NSW 1 output Y / NSW 1 output Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output quantity Y of instance NSW 1 of the numeric changeover switch.		
<b>p20226</b>	<b>NSW 1 run-time group / NSW 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance NSW 1 of the numeric changeover switch is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20227</b>	<b>NSW 1 run sequence / NSW 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7250
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	620
<b>Description:</b>	Setting parameter for the run sequence of instance NSW 1 within the run-time group set in p20226.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20228</b>	<b>CI: LIM 0 input X / LIM 0 input X</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantity X of instance LIM 0 of the limiter.		
<b>p20229</b>	<b>LIM 0 upper limit value LU / LIM 0 upper lim LU</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000
<b>Description:</b>	Setting parameter for the upper limit value LU of instance LIM 0 of the limiter.		

## 2 Parameters

### 2.2 List of parameters

<b>p20230</b>	<b>LIM 0 lower limit value LL / LIM 0 lower lim LL</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000
<b>Description:</b>	Setting parameter for the lower limit value LL of instance LIM 0 of the limiter.		
<b>r20231</b>	<b>CO: LIM 0 output Y / LIM 0 output Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the limited output quantity Y of instance LIM 0 of the limiter.		
<b>r20232</b>	<b>BO: LIM 0 input quantity at the upper limit QU / LIM 0 QU</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter of instance LIM 0 of limiter QU (upper limit reached), i.e. QU = 1 for X >= LU.		
<b>r20233</b>	<b>BO: LIM 0 input quantity at the lower limit QL / LIM 0 QL</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter of instance LIM 0 of limiter QL (lower limit reached), i.e. QL = 1 for X <= LL.		
<b>p20234</b>	<b>LIM 0 run-time group / LIM 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance LIM 0 of the limiter is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20235</b>	<b>LIM 0 run sequence / LIM 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	640
<b>Description:</b>	Setting parameter for the run sequence of instance LIM 0 within the run-time group set in p20234.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		



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<b>p20236</b>	<b>CI: LIM 1 input X / LIM 1 input X</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**Description:** Sets the signal source of input quantity X of instance LIM 1 of the limiter.

---

<b>p20237</b>	<b>LIM 1 upper limit value LU / LIM 1 upper lim LU</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000

**Description:** Setting parameter for the upper limit value LU of instance LIM 1 of the limiter.

---

<b>p20238</b>	<b>LIM 1 lower limit value LL / LIM 1 lower lim LL</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000

**Description:** Setting parameter for the lower limit value LL of instance LIM 1 of the limiter.

---

<b>r20239</b>	<b>CO: LIM 1 output Y / LIM 1 output Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Display parameter for the limited output quantity Y of instance LIM 1 of the limiter.

---

<b>r20240</b>	<b>BO: LIM 1 input quantity at the upper limit QU / LIM 1 QU</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Display parameter of instance LIM 1 of limiter QU (upper limit reached), i.e. QU = 1 for X >= LU.

---

<b>r20241</b>	<b>BO: LIM 1 input quantity at the lower limit QL / LIM 1 QL</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Display parameter of instance LIM 1 of limiter QL (lower limit reached), i.e. QL = 1 for X <= LL.

<b>p20242</b>	<b>LIM 1 run-time group / LIM 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance LIM 1 of the limiter is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20243</b>	<b>LIM 1 run sequence / LIM 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7260
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	650
<b>Description:</b>	Setting parameter for the run sequence of instance LIM 1 within the run-time group set in p20242.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20244[0...1]</b>	<b>CI: PT1 0 inputs / PT1 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7262
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantity X and of setting value SV of instance PT1 0 of the smoothing element.		
<b>Index:</b>	[0] = Input X [1] = Setting value SV		
<b>p20245</b>	<b>BI: PT1 0 accept setting value S / PT1 0 acc set val</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7262
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the "accept setting value" signal of instant PT1 0 of the smoothing element.		
<b>p20246</b>	<b>PT1 0 smoothing time constant in ms / PT1 0 T_smooth ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7262
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	340.28235E36	0.00
<b>Description:</b>	Sets the smoothing time constant T in milliseconds of instance PT1 0 of the smoothing element.		

<b>r20247</b>	<b>CO: PT1 0 output Y / PT1 0 output Y</b>	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
		<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7262
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		-	-	-
<b>Description:</b>	Display parameter for the smoothed output quantity Y of instance PT1 0 of the smoothing element.			
<b>p20248</b>	<b>PT1 0 run-time group / PT1 0 RTG</b>	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
		<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7262
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance PT1 0 of the smoothing element is to be called.			
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate			
<b>p20249</b>	<b>PT1 0 run sequence / PT1 0 RunSeq</b>	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
		<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7262
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		0	32000	670
<b>Description:</b>	Setting parameter for the run sequence of instance PT1 0 within the run-time group set in p20248.			
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.			
<b>p20250[0...1]</b>	<b>CI: PT1 1 inputs / PT1 1 inputs</b>	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
		<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7262
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		-	-	0
<b>Description:</b>	Sets the signal source of input quantity X and of setting value SV of instance PT1 1 of the smoothing element.			
<b>Index:</b>	[0] = Input X [1] = Setting value SV			
<b>p20251</b>	<b>BI: PT1 1 accept setting value S / PT1 1 acc set val</b>	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
		<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
		<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7262
		<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
		-	-	0
<b>Description:</b>	Sets the signal source for the "accept setting value" signal of instant PT1 1 of the smoothing element.			

## 2 Parameters

### 2.2 List of parameters

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<b>p20252</b>	<b>PT1 1 smoothing time constant in ms / PT1 1 T_smooth ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7262
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	340.28235E36	0.00
<b>Description:</b>	Sets the smoothing time constant T in milliseconds of instance PT1 1 of the smoothing element.		

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<b>r20253</b>	<b>CO: PT1 1 output Y / PT1 1 output Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7262
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the smoothed output quantity Y of instance PT1 1 of the smoothing element.		

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<b>p20254</b>	<b>PT1 1 run-time group / PT1 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7262
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance PT1 1 of the smoothing element is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		

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<b>p20255</b>	<b>PT1 1 run sequence / PT1 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7262
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	680
<b>Description:</b>	Setting parameter for the run sequence of instance PT1 1 within the run-time group set in p20254.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

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<b>p20256[0...1]</b>	<b>CI: INT 0 inputs / INT 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7264
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantity X and of setting value SV of instance INT 0 of the integrator.		
<b>Index:</b>	[0] = Input X [1] = Setting value SV		

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<b>p20257</b>	<b>INT 0 upper limit value LU / INT 0 upper lim LU</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7264
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000
<b>Description:</b>	Sets the upper limit value LU of instance INT 0 of the integrator.		
<b>p20258</b>	<b>INT 0 lower limit value LL / INT 0 lower lim LL</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7264
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000
<b>Description:</b>	Sets the lower limit value LL of instance INT 0 of the integrator.		
<b>p20259</b>	<b>INT 0 integrating time constant in ms / INT 0 T_Integr ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7264
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	340.28235E36	0.00
<b>Description:</b>	Sets the integrating time constant Ti in milliseconds of instance INT 0 of the integrator.		
<b>p20260</b>	<b>BI: INT 0 accept setting value S / INT 0 acc set val</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7264
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the "accept setting value" signal of instant INT 0 of the integrator.		
<b>r20261</b>	<b>CO: INT 0 output Y / INT 0 output Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7264
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output quantity Y of instance INT 0 of the integrator. If LL >= LU, then the output quantity Y = LU.		
<b>r20262</b>	<b>BO: INT 0 integrator at the upper limit QU / INT 0 QU</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7264
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the signal QU that output quantity Y of instance INT 0 of the integrator has reached the upper limit value LU.		

<b>r20263</b>	<b>BO: INT 0 integrator at the lower limit QL / INT 0 QL</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7264
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the signal QL that output quantity Y of instance INT 0 of the integrator has reached the lower limit value LL.		
<b>p20264</b>	<b>INT 0 run-time group / INT 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7264
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance INT 0 of the integrator is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20265</b>	<b>INT 0 run sequence / INT 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7264
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	700
<b>Description:</b>	Setting parameter for the run sequence of instance INT 0 within the run-time group set in p20264.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20266</b>	<b>CI: LVM 0 input X / LVM 0 input X</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantity X of instance LVM 0 of the double-sided limiter.		
<b>p20267</b>	<b>LVM 0 interval average value M / LVM 0 avg value M</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000
<b>Description:</b>	Setting parameter for the interval average M of instance LVM 0 of the double-sided limiter.		

<b>p20268</b>	<b>LVM 0 interval limit L / LVM 0 limit L</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000
<b>Description:</b>	Setting parameter for the interval limit L of instance LVM 0 of the double-sided limiter.		
<b>p20269</b>	<b>LVM 0 hyst HY / LVM 0 hyst HY</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000
<b>Description:</b>	Setting parameter for hysteresis HY of instance LVM 0 of the double-sided limiter.		
<b>r20270</b>	<b>BO: LVM 0 input quantity above interval QU / LVM 0 X above QU</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter of instance LVM 0 of the double-sided limiter that input quantity X was at least once $X > M + L$ and $X$ is $\geq M + L - HY$ .		
<b>r20271</b>	<b>BO: LVM 0 input quantity within interval QM / LVM 0 X within QM</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter of instance LVM 0 of the double-sided limiter that the input quantity X lies within the interval.		
<b>r20272</b>	<b>BO: LVM 0 input quantity below interval QL / LVM 0 X below QL</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter of instance LVM 0 of the double-sided limiter that input quantity X was at least once $X < M - L$ and $X$ is $\leq M - L + HY$ .		
<b>p20273</b>	<b>LVM 0 run-time group / LVM 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance LVM 0 of the double-sided limiter is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		

## 2 Parameters

### 2.2 List of parameters

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<b>p20274</b>	<b>LVM 0 run sequence / LVM 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	7999	720
<b>Description:</b>	Setting parameter for the run sequence of instance LVM 0 within the run-time group set in p20273.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

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<b>p20275</b>	<b>CI: LVM 1 input X / LVM 1 input X</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantity X of instance LVM 1 of the double-sided limiter.		

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<b>p20276</b>	<b>LVM 1 interval average value M / LVM 1 avg value M</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000
<b>Description:</b>	Setting parameter for the interval average M of instance LVM 1 of the double-sided limiter.		

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<b>p20277</b>	<b>LVM 1 interval limit L / LVM 1 limit L</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000
<b>Description:</b>	Setting parameter for the interval limit L of instance LVM 1 of the double-sided limiter.		

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<b>p20278</b>	<b>LVM 1 hyst HY / LVM 1 hyst HY</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000
<b>Description:</b>	Setting parameter for hysteresis HY of instance LVM 1 of the double-sided limiter.		

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<b>r20279</b>	<b>BO: LVM 1 input quantity above interval QU / LVM 1 X above QU</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter of instance LVM 1 of the double-sided limiter that input quantity X was at least once $X > M + L$ and $X \geq M + L - HY$ .		

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<b>r20280</b>	<b>BO: LVM 1 input quantity within interval QM / LVM 1 X within QM</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter of instance LVM 1 of the double-sided limiter that the input quantity X lies within the interval.		
<b>r20281</b>	<b>BO: LVM 1 input quantity below interval QL / LVM 1 X below QL</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter of instance LVM 1 of the double-sided limiter that input quantity X was at least once $X < M - L$ and $X \leq M - L + HY$ .		
<b>p20282</b>	<b>LVM 1 run-time group / LVM 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance LVM 1 of the double-sided limiter is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20283</b>	<b>LVM 1 run sequence / LVM 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7270
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	7999	730
<b>Description:</b>	Setting parameter for the run sequence of instance LVM 1 within the run-time group set in p20282.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20284</b>	<b>CI: DIF 0 input X / DIF 0 input X</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7264
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantity X of instance DIF 0 of the differentiating element.		

## 2 Parameters

### 2.2 List of parameters

<b>p20285</b>	<b>DIF 0 differentiating time constant in ms / DIF 0 T_diff ms</b>	<b>Access level:</b> 3 <b>Can be changed:</b> T <b>Units group:</b> - <b>Min</b> 0.00	<b>Calculated:</b> - <b>Scaling:</b> - <b>Unit selection:</b> - <b>Max</b> 340.28235E36	<b>Data type:</b> FloatingPoint32 <b>Dyn. index:</b> - <b>Func. diagram:</b> 7264 <b>Factory setting</b> 0.00
<b>Description:</b>	Sets the differentiating time constant Td in milliseconds of instance DIF 0 of the differentiating element.			
<b>r20286</b>	<b>CO: DIF 0 output Y / DIF 0 output Y</b>	<b>Access level:</b> 3 <b>Can be changed:</b> - <b>Units group:</b> - <b>Min</b> -	<b>Calculated:</b> - <b>Scaling:</b> PERCENT <b>Unit selection:</b> - <b>Max</b> -	<b>Data type:</b> FloatingPoint32 <b>Dyn. index:</b> - <b>Func. diagram:</b> 7264 <b>Factory setting</b> -
<b>Description:</b>	Display parameter for output quantity Y of instance DIF 0 of the differentiating element.			
<b>p20287</b>	<b>DIF 0 run-time group / DIF 0 RTG</b>	<b>Access level:</b> 3 <b>Can be changed:</b> T <b>Units group:</b> - <b>Min</b> 5	<b>Calculated:</b> - <b>Scaling:</b> - <b>Unit selection:</b> - <b>Max</b> 9999	<b>Data type:</b> Integer16 <b>Dyn. index:</b> - <b>Func. diagram:</b> 7264 <b>Factory setting</b> 9999
<b>Description:</b>	Setting parameter for the run-time group in which instance DIF 0 of the differentiating element is to be called.			
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate			
<b>p20288</b>	<b>DIF 0 run sequence / DIF 0 RunSeq</b>	<b>Access level:</b> 3 <b>Can be changed:</b> T <b>Units group:</b> - <b>Min</b> 0	<b>Calculated:</b> - <b>Scaling:</b> - <b>Unit selection:</b> - <b>Max</b> 32000	<b>Data type:</b> Unsigned16 <b>Dyn. index:</b> - <b>Func. diagram:</b> 7264 <b>Factory setting</b> 750
<b>Description:</b>	Setting parameter for the run sequence of instance DIF 0 within the run-time group set in p20287.			
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.			
<b>p20300</b>	<b>BI: NOT 4 input I / NOT 4 input I</b>	<b>Access level:</b> 3 <b>Can be changed:</b> T <b>Units group:</b> - <b>Min</b> -	<b>Calculated:</b> - <b>Scaling:</b> - <b>Unit selection:</b> - <b>Max</b> -	<b>Data type:</b> U32 / Binary <b>Dyn. index:</b> - <b>Func. diagram:</b> 7216 <b>Factory setting</b> 0
<b>Description:</b>	Sets the signal source of input quantity I of instance NOT 4 of the inverter.			
<b>r20301</b>	<b>BO: NOT 4 inverted output / NOT 4 inv output</b>	<b>Access level:</b> 3 <b>Can be changed:</b> - <b>Units group:</b> - <b>Min</b> -	<b>Calculated:</b> - <b>Scaling:</b> - <b>Unit selection:</b> - <b>Max</b> -	<b>Data type:</b> Unsigned32 <b>Dyn. index:</b> - <b>Func. diagram:</b> 7216 <b>Factory setting</b> -
<b>Description:</b>	Display parameter for the inverted output of instance NOT 4 of the inverter.			

<b>p20302</b>	<b>NOT 4 run-time group / NOT 4 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance NOT 4 of the inverter is to be called.		
<b>Value:</b>	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		
<b>p20303</b>	<b>NOT 4 run sequence / NOT 4 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	770
<b>Description:</b>	Setting parameter for the run sequence of instance NOT 4 within the run-time group set in p20302.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20304</b>	<b>BI: NOT 5 input I / NOT 5 input I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantity I of instance NOT 5 of the inverter.		
<b>r20305</b>	<b>BO: NOT 5 inverted output / NOT 5 inv output</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the inverted output of instance NOT 5 of the inverter.		
<b>p20306</b>	<b>NOT 5 run-time group / NOT 5 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance NOT 5 of the inverter is to be called.		
<b>Value:</b>	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		

## 2 Parameters

### 2.2 List of parameters

6: Run-time group 6  
9999: Do not calculate

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#### p20307

#### NOT 5 run sequence / NOT 5 RunSeq

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7216
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	32000	780

**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

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	0

**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

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
-	-	-

**Description:**

Display parameter for the output quantity  $Y = X0 + X1 + X2 + X3$  of instance ADD 2 of the adder.

---

#### p20310

#### ADD 2 run-time group / ADD 2 RTG

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
5	9999	9999

**Description:**

Setting parameter for the run-time group in which the instance ADD 2 of the adder is to be called.

**Value:**

5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate

---

#### p20311

#### ADD 2 run sequence / ADD 2 RunSeq

<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7220
<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
0	32000	800

**Description:**

Setting parameter for the run sequence of instance ADD 2 within the run-time group set in p20310.

**Note:**

The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

<b>p20312[0...1]</b>	<b>CI: NCM 0 inputs / NCM 0 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7225
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities X0 and X1 of instance NCM 0 of the numeric comparator.		
<b>Index:</b>	[0] = Input X0 [1] = Input X1		
<b>r20313</b>	<b>BO: NCM 0 output QU / NCM 0 output QU</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7225
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity QU of instance NCM 0 of the numeric comparator. QU is only set if X0 > X1.		
<b>r20314</b>	<b>BO: NCM 0 output QE / NCM 0 output QE</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7225
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity QE of instance NCM 0 of the numeric comparator. QE is only set if X0 = X1.		
<b>r20315</b>	<b>BO: NCM 0 output QL / NCM 0 output QL</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7225
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity QL of instance NCM 0 of the numeric comparator. QL is only set if X0 < X1.		
<b>p20316</b>	<b>NCM 0 run-time group / NCM 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7225
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance NCM 0 of the numeric comparator is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		

<b>p20317</b>	<b>NCM 0 run sequence / NCM 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7225
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	820
<b>Description:</b>	Setting parameter for the run sequence of instance NCM 0 within the run-time group set in p20316.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20318[0...1]</b>	<b>CI: NCM 1 inputs / NCM 1 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7225
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source of input quantities X0 and X1 of instance NCM 1 of the numeric comparator.		
<b>Index:</b>	[0] = Input X0 [1] = Input X1		
<b>r20319</b>	<b>BO: NCM 1 output QU / NCM 1 output QU</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7225
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity QU of instance NCM 1 of the numeric comparator. QU is only set if X0 > X1.		
<b>r20320</b>	<b>BO: NCM 1 output QE / NCM 1 output QE</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7225
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity QE of instance NCM 1 of the numeric comparator. QE is only set if X0 = X1.		
<b>r20321</b>	<b>BO: NCM 1 output QL / NCM 1 output QL</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7225
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for binary quantity QL of instance NCM 1 of the numeric comparator. QL is only set if X0 < X1.		

<b>p20322</b>	<b>NCM 1 run-time group / NCM 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7225
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance NCM 1 of the numeric comparator is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20323</b>	<b>NCM 1 run sequence / NCM 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7225
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	830
<b>Description:</b>	Setting parameter for the run sequence of instance NCM 1 within the run-time group set in p20322.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20324[0...1]</b>	<b>BI: RSR 2 inputs / RSR 2 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for set input S and reset input R of instance RSR 2 of the RS flipflop.		
<b>Index:</b>	[0] = Set S [1] = Reset R		
<b>r20325</b>	<b>BO: RSR 2 output Q / RSR 2 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output Q of instance RSR 2 of the RS flipflop		
<b>r20326</b>	<b>BO: RSR 2 inverted output QN / RSR 2 inv outp QN</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for inverted output QN of instance RSR 2 of the RS flipflop.		

## 2 Parameters

### 2.2 List of parameters

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<b>p20327</b>	<b>RSR 2 run-time group / RSR 2 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance RSR 2 of the RS flipflop is to be called.		
<b>Value:</b>	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		

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<b>p20328</b>	<b>RSR 2 run sequence / RSR 2 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	7999	850
<b>Description:</b>	Setting parameter for the run sequence of instance RSR 2 within the run-time group set in p20327.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

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<b>p20329[0...3]</b>	<b>BI: DFR 2 inputs / DFR 2 inputs</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	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.		
<b>Index:</b>	[0] = Trigger input I [1] = D input D [2] = Set S [3] = Reset R		

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<b>r20330</b>	<b>BO: DFR 2 output Q / DFR 2 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output Q of instance DFR 2 of the D flipflop.		

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<b>r20331</b>	<b>BO: DFR 2 inverted output QN / DFR 2 inv outp QN</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the inverted output QN of instance DFR 2 of the D flipflop.		



<b>p20332</b>	<b>DFR 2 run-time group / DFR 2 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	1	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance DFR 2 of the D flipflop is to be called.		
<b>Value:</b>	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		
<b>p20333</b>	<b>DFR 2 run sequence / DFR 2 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7240
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	870
<b>Description:</b>	Setting parameter for the run-time group of instance DFR 2 within the run-time group set in p20332.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20334</b>	<b>BI: PDE 2 input pulse I / PDE 2 inp_pulse I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the input pulse I of instance PDE 2 of the closing delay device.		
<b>p20335</b>	<b>PDE 2 pulse delay time in ms / PDE 2 t_del ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse delay time T in milliseconds of instance PDE 2 of the closing delay device.		
<b>r20336</b>	<b>BO: PDE 2 output Q / PDE 2 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance PDE 2 of the closing delay device.		

## 2 Parameters

### 2.2 List of parameters

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<b>p20337</b>	<b>PDE 2 run-time group / PDE 2 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance PDE 2 of the closing delay device is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		

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<b>p20338</b>	<b>PDE 2 run sequence / PDE 2 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	890
<b>Description:</b>	Setting parameter for the run sequence of instance PDE 2 within the run-time group set in p20337.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

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<b>p20339</b>	<b>BI: PDE 3 input pulse I / PDE 3 inp_pulse I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the input pulse I of instance PDE 3 of the closing delay device.		

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<b>p20340</b>	<b>PDE 3 pulse delay time in ms / PDE 3 t_del ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse delay time T in milliseconds of instance PDE 3 of the closing delay device.		

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<b>r20341</b>	<b>BO: PDE 3 output Q / PDE 3 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance PDE 3 of the closing delay device.		

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<b>p20342</b>	<b>PDE 3 run-time group / PDE 3 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance PDE 3 of the closing delay device is to be called.		

**Value:** 5: Run-time group 5  
6: Run-time group 6  
9999: Do not calculate

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<b>p20343</b>	<b>PDE 3 run sequence / PDE 3 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7232
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	900
<b>Description:</b>	Setting parameter for the run sequence of instance PDE 3 within the run-time group set in p20342.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

---

<b>p20344</b>	<b>BI: PDF 2 input pulse I / PDF 2 inp_pulse I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the input pulse I of instance PDF 2 of the breaking delay device.		

---

<b>p20345</b>	<b>PDF 2 pulse extension time in ms / PDF 2 t_ext ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse extension time T in milliseconds of instance PDF 2 of the breaking delay device.		

---

<b>r20346</b>	<b>BO: PDF 2 output Q / PDF 2 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance PDF 2 of the breaking delay device.		

---

<b>p20347</b>	<b>PDF 2 run-time group / PDF 2 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance PDF 2 of the breaking delay device is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		

## 2 Parameters

### 2.2 List of parameters

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<b>p20348</b>	<b>PDF 2 run sequence / PDF 2 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	920
<b>Description:</b>	Setting parameter for the run sequence of instance PDE 2 within the run-time group set in p20347.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

---

<b>p20349</b>	<b>BI: PDF 3 input pulse I / PDF 3 inp_pulse I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the input pulse I of instance PDF 3 of the breaking delay device.		

---

<b>p20350</b>	<b>PDF 3 pulse extension time in ms / PDF 3 t_ext ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse extension time T in milliseconds of instance PDF 3 of the breaking delay device.		

---

<b>r20351</b>	<b>BO: PDF 3 output Q / PDF 3 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance PDF 3 of the breaking delay device.		

---

<b>p20352</b>	<b>PDF 3 run-time group / PDF 3 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance PDF 3 of the breaking delay device is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		

---

<b>p20353</b>	<b>PDF 3 run sequence / PDF 3 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7233
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	930
<b>Description:</b>	Setting parameter for the run sequence of instance PDE 3 within the run-time group set in p20352.		

---

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

---

<b>p20354</b>	<b>BI: MFP 2 input pulse I / MFP 2 inp_pulse I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0

**Description:** Sets the signal source for the input pulse I of instance MFP 2 of the pulse generator.

---

<b>p20355</b>	<b>MFP 2 pulse duration in ms / MFP 2 pulse_dur ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00

**Description:** Setting parameter for pulse duration T in milliseconds of instance MFP 2 of the pulse generator.

---

<b>r20356</b>	<b>BO: MFP 2 output Q / MFP 2 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Display parameter for output pulse Q of instance MFP 2 of the pulse generator.

---

<b>p20357</b>	<b>MFP 2 run-time group / MFP 2 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999

**Description:** Setting parameter for the run-time group in which the instance MFP 2 of the pulse generator is to be called.

**Value:**  
 5: Run-time group 5  
 6: Run-time group 6  
 9999: Do not calculate

---

<b>p20358</b>	<b>MFP 2 run sequence / MFP 2 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	950

**Description:** Setting parameter for the run sequence of instance MFP 2 within the run-time group set in p20357.

**Note:** The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

## 2 Parameters

### 2.2 List of parameters

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<b>p20359</b>	<b>BI: MFP 3 input pulse I / MFP 3 inp_pulse I</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / Binary
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for the input pulse I of instance MFP 3 of the pulse generator.		

---

<b>p20360</b>	<b>MFP 3 pulse duration in ms / MFP 3 pulse_dur ms</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0.00	5400000.00	0.00
<b>Description:</b>	Setting parameter for pulse duration T in milliseconds of instance MFP 3 of the pulse generator.		

---

<b>r20361</b>	<b>BO: MFP 3 output Q / MFP 3 output Q</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned32
	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for output pulse Q of instance MFP 3 of the pulse generator.		

---

<b>p20362</b>	<b>MFP 3 run-time group / MFP 3 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which the instance MFP 3 of the pulse generator is to be called.		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		

---

<b>p20363</b>	<b>MFP 3 run sequence / MFP 3 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7230
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	960
<b>Description:</b>	Setting parameter for the run sequence of instance MFP 3 within the run-time group set in p20362.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

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<b>p20372</b>	<b>CI: PLI 0 input X / PLI 0 input X</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7226
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for input X of the polyline (20 breakpoints) of instance PLI 0.		

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<b>r20373</b>	<b>CO: PLI 0 output Y / PLI 0 output Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7226
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the output quantity Y of the polyline (20 breakpoints) of instance PLI 0		

---

<b>p20374[0...19]</b>	<b>PLI 0 X-coordinate, A breakpoint / PLI 0 X-coordinate</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7226
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000

**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
- [11] = Breakpoint 11
- [12] = Breakpoint 12
- [13] = Breakpoint 13
- [14] = Breakpoint 14
- [15] = Breakpoint 15
- [16] = Breakpoint 16
- [17] = Breakpoint 17
- [18] = Breakpoint 18
- [19] = Breakpoint 19

---

<b>p20375[0...19]</b>	<b>PLI 0 Y-coordinate, B breakpoint / PLI 0 Y-coordinate</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7226
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000

**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
- [11] = Breakpoint 11
- [12] = Breakpoint 12
- [13] = Breakpoint 13
- [14] = Breakpoint 14
- [15] = Breakpoint 15

## 2 Parameters

### 2.2 List of parameters

[16] = Breakpoint 16  
 [17] = Breakpoint 17  
 [18] = Breakpoint 18  
 [19] = Breakpoint 19

<b>p20376</b>	<b>PLI 0 run-time group / PLI 0 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7226
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance PLI 0 of the polyline is to be called		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		
<b>p20377</b>	<b>PLI 0 run sequence / PLI 0 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7226
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	980
<b>Description:</b>	Setting parameter for the run sequence of instance PLI 0 within the run-time group set in p20376.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		
<b>p20378</b>	<b>CI: PLI 1 input X / PLI 1 input X</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> U32 / FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7226
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	0
<b>Description:</b>	Sets the signal source for input X of the polyline (20 breakpoints) of instance PLI 1.		
<b>r20379</b>	<b>CO: PLI 1 output Y / PLI 1 output Y</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> -	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7226
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-
<b>Description:</b>	Display parameter for the output quantity Y of the polyline (20 breakpoints) of instance PLI 1		
<b>p20380[0...19]</b>	<b>PLI 1 X-coordinate, A breakpoint / PLI 1 X-coordinate</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7226
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000
<b>Description:</b>	Sets the x-coordinates for the breakpoints (A0...A19) of the polyline (20 breakpoints) of instance PLI 1.		
<b>Index:</b>	[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  
 [11] = Breakpoint 11  
 [12] = Breakpoint 12  
 [13] = Breakpoint 13  
 [14] = Breakpoint 14  
 [15] = Breakpoint 15  
 [16] = Breakpoint 16  
 [17] = Breakpoint 17  
 [18] = Breakpoint 18  
 [19] = Breakpoint 19

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<b>p20381[0...19]</b>	<b>PLI 1 Y-coordinate, B breakpoint / PLI 1 Y-coordinate</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> FloatingPoint32
	<b>Can be changed:</b> T	<b>Scaling:</b> PERCENT	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7226
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-340.28235E36	340.28235E36	0.0000
<b>Description:</b>	Sets the y-coordinates for the breakpoints (B0...B19) of the polyline (20 breakpoints) of instance PLI 1.		
<b>Index:</b>	[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 [11] = Breakpoint 11 [12] = Breakpoint 12 [13] = Breakpoint 13 [14] = Breakpoint 14 [15] = Breakpoint 15 [16] = Breakpoint 16 [17] = Breakpoint 17 [18] = Breakpoint 18 [19] = Breakpoint 19		

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<b>p20382</b>	<b>PLI 1 run-time group / PLI 1 RTG</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7226
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	5	9999	9999
<b>Description:</b>	Setting parameter for the run-time group in which instance PLI 1 of the polyline is to be called		
<b>Value:</b>	5: Run-time group 5 6: Run-time group 6 9999: Do not calculate		

## 2 Parameters

### 2.2 List of parameters

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<b>p20383</b>	<b>PLI 1 run sequence / PLI 1 RunSeq</b>		
	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 7226
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	32000	990
<b>Description:</b>	Setting parameter for the run sequence of instance PLI 1 within the run-time group set in p20382.		
<b>Note:</b>	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

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<b>p60022</b>	<b>PROFIsafe telegram selection / Ps telegram_sel</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2_PN_F	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	998	998
<b>Description:</b>	Sets the telegram number for PROFIsafe.		
<b>Value:</b>	0: No PROFIsafe telegram selected 30: PROFIsafe standard telegram 30, PZD-1/1 900: PROFIsafe SIEMENS telegram 900, PZD-2/2 998: Compatibility mode (as for firmware version < 4.6)		
<b>Note:</b>	For p9601.3 = p9801.3 = 1 (PROFIsafe enabled), the following variants exist when parameterizing PROFIsafe telegram 30: - p9611 = p9811 = 998 and p60022 = 0 - p9611 = p9811 = 998 and p60022 = 30 - p9611 = p9811 = 30 and p60022 = 30		

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<b>p60022</b>	<b>PROFIsafe telegram selection / Ps telegram_sel</b>		
CU240E-2_DP	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned16
CU240E-2 PN	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> -
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	0	998	998
<b>Description:</b>	Sets the telegram number for PROFIsafe.		
<b>Value:</b>	0: No PROFIsafe telegram selected 30: PROFIsafe standard telegram 30, PZD-1/1 998: Compatibility mode (as for firmware version < 4.6)		
<b>Note:</b>	For p9601.3 = p9801.3 = 1 (PROFIsafe enabled), the following variants exist when parameterizing PROFIsafe telegram 30: - p9611 = p9811 = 998 and p60022 = 0 - p9611 = p9811 = 998 and p60022 = 30 - p9611 = p9811 = 30 and p60022 = 30		

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<b>p60122</b>	<b>PROFIdrive SIC telegram selection / Pd SIC telegr</b>		
CU240E-2_DP_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Integer16
CU240E-2_PN_F	<b>Can be changed:</b> T	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2423
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	700	999	999
<b>Description:</b>	Sets the telegram for the Safety Info Channel (SIC). The SIC telegram p60122 is attached directly to the PZD telegram p0922/p2079.		
<b>Value:</b>	700: Supplementary telegram 700, PZD-0/3 999: Free telegram configuration with BICO		
<b>Dependency:</b>	Refer to: p0922, p2071, p2079		

**Note:** The clearance to the PZD telegram can be increased using p2071.  
 After changing p0922/p2079 or p2071, then p60122 must be set again.  
 The telegram interconnections can only be changed if p60122 and p0922 are both set to 999.

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<b>r61000[0...239]</b>	<b>PROFINET Name of Station / PN Name of Station</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2410
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Displays PROFINET Name of Station.

**Notice:** An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

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<b>r61001[0...3]</b>	<b>PROFINET IP of Station / PN IP of Station</b>		
CU240E-2_PN_F	<b>Access level:</b> 3	<b>Calculated:</b> -	<b>Data type:</b> Unsigned8
CU240E-2 PN	<b>Can be changed:</b> -	<b>Scaling:</b> -	<b>Dyn. index:</b> -
	<b>Units group:</b> -	<b>Unit selection:</b> -	<b>Func. diagram:</b> 2410
	<b>Min</b>	<b>Max</b>	<b>Factory setting</b>
	-	-	-

**Description:** Displays PROFINET IP of Station.

## 2.3 Parameters for data sets

### 2.3.1 Command Data Set (CDS)

Product: SINAMICS G120 CU240, Version: 4702900, Language: eng, Type: CDS

p0641[0...n]	Cl: Current limit variable / Curr lim var
p0820[0...n]	Bl: Drive Data Set selection DDS bit 0 / DDS select., bit 0
p0821[0...n]	Bl: Drive Data Set selection DDS bit 1 / DDS select., bit 1
p0840[0...n]	Bl: ON / OFF (OFF1) / ON / OFF (OFF1)
p0844[0...n]	Bl: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1
p0845[0...n]	Bl: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2
p0848[0...n]	Bl: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1
p0849[0...n]	Bl: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2
p0852[0...n]	Bl: Enable operation/inhibit operation / Operation enable
p0854[0...n]	Bl: Control by PLC/no control by PLC / Master ctrl by PLC
p0855[0...n]	Bl: Unconditionally release holding brake / Uncond open brake
p0856[0...n]	Bl: Speed controller enable / n_ctrl enable
p0858[0...n]	Bl: Unconditionally close holding brake / Uncond close brake
p1000[0...n]	Speed setpoint selection / n_set sel
p1020[0...n]	Bl: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0
p1021[0...n]	Bl: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1
p1022[0...n]	Bl: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2
p1023[0...n]	Bl: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3
p1035[0...n]	Bl: Motorized potentiometer setpoint raise / Mop raise
p1036[0...n]	Bl: Motorized potentiometer lower setpoint / Mop lower
p1039[0...n]	Bl: Motorized potentiometer inversion / MotP inv
p1041[0...n]	Bl: Motorized potentiometer manual/automatic / Mop manual/auto
p1042[0...n]	Cl: Motorized potentiometer automatic setpoint / Mop auto setpoint
p1043[0...n]	Bl: Motorized potentiometer accept setting value / MotP acc set val
p1044[0...n]	Cl: Motorized potentiometer setting value / Mop set val
p1051[0...n]	Cl: Speed limit RFG positive direction of rotation / n_limit RFG pos
p1052[0...n]	Cl: Speed limit RFG negative direction of rotation / n_limit RFG neg
p1055[0...n]	Bl: Jog bit 0 / Jog bit 0
p1056[0...n]	Bl: Jog bit 1 / Jog bit 1
p1070[0...n]	Cl: Main setpoint / Main setpoint
p1071[0...n]	Cl: Main setpoint scaling / Main setp scal
p1075[0...n]	Cl: Supplementary setpoint / Suppl setp
p1076[0...n]	Cl: Supplementary setpoint scaling / Suppl setp scal
p1085[0...n]	Cl: Speed limit in positive direction of rotation / n_limit pos
p1088[0...n]	Cl: Speed limit in negative direction of rotation / n_limit neg
p1098[0...n]	Cl: Skip speed scaling / n_skip scal
p1106[0...n]	Cl: Minimum speed signal source / n_min s_src
p1108[0...n]	Bl: Total setpoint selection / Total setp sel
p1109[0...n]	Cl: Total setpoint / Total setp
p1110[0...n]	Bl: Inhibit negative direction / Inhib neg dir
p1111[0...n]	Bl: Inhibit positive direction / Inhib pos dir
p1113[0...n]	Bl: Setpoint inversion / Setp inv
p1122[0...n]	Bl: Bypass ramp-function generator / Bypass RFG
p1138[0...n]	Cl: Ramp-function generator ramp-up time scaling / RFG t_RU scal
p1139[0...n]	Cl: Ramp-function generator ramp-down time scaling / RFG t_RD scal
p1140[0...n]	Bl: Enable ramp-function generator/inhibit ramp-function generator / RFG enable
p1141[0...n]	Bl: Continue ramp-function generator/freeze ramp-function generator / Continue RFG
p1142[0...n]	Bl: 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_sv 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
p1479[0...n]	CI: Speed controller integrator setting value scaling / n_ctrl I_val scal
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
p1502[0...n]	BI: Freeze moment of inertia estimator / J_estim freeze
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 hold
p2289[0...n]	CI: Technology controller pre-control signal / Tec_ctr prectr_sig
p2296[0...n]	CI: Technology controller output scaling / Tec_ctrl outp scal

p2297[0...n]	Cl: Technology controller maximum limit signal source / Tec_ctrMaxLimS_src
p2298[0...n]	Cl: Technology controller minimum limit signal source / Tec_ctrl min_l s_s
p2299[0...n]	Cl: Technology controller limit offset / Tech_ctrl lim offs
p3111[0...n]	Bl: External fault 3 enable / Ext fault 3 enab
p3112[0...n]	Bl: External fault 3 enable negated / Ext fit 3 enab neg
p3230[0...n]	Cl: Load monitoring speed actual value / Load monit n_act
p3232[0...n]	Bl: Load monitoring failure detection / Load_moni fail_det
p3330[0...n]	Bl: 2/3 wire control command 1 / 2/3 wire cmd 1
p3331[0...n]	Bl: 2/3 wire control command 2 / 2/3 wire cmd 2
p3332[0...n]	Bl: 2/3 wire control command 3 / 2/3 wire cmd 3

### 2.3.2 Drive Data Sets (DDS)

Product: SINAMICS G120 CU240, Version: 4702900, Language: eng, Type: DDS

p0340[0...n]	Automatic calculation motor/control parameters / Calc auto par
p0640[0...n]	Current limit / Current limit
p1001[0...n]	CO: Fixed speed setpoint 1 / n_set_fixed 1
p1002[0...n]	CO: Fixed speed setpoint 2 / n_set_fixed 2
p1003[0...n]	CO: Fixed speed setpoint 3 / n_set_fixed 3
p1004[0...n]	CO: Fixed speed setpoint 4 / n_set_fixed 4
p1005[0...n]	CO: Fixed speed setpoint 5 / n_set_fixed 5
p1006[0...n]	CO: Fixed speed setpoint 6 / n_set_fixed 6
p1007[0...n]	CO: Fixed speed setpoint 7 / n_set_fixed 7
p1008[0...n]	CO: Fixed speed setpoint 8 / n_set_fixed 8
p1009[0...n]	CO: Fixed speed setpoint 9 / n_set_fixed 9
p1010[0...n]	CO: Fixed speed setpoint 10 / n_set_fixed 10
p1011[0...n]	CO: Fixed speed setpoint 11 / n_set_fixed 11
p1012[0...n]	CO: Fixed speed setpoint 12 / n_set_fixed 12
p1013[0...n]	CO: Fixed speed setpoint 13 / n_set_fixed 13
p1014[0...n]	CO: Fixed speed setpoint 14 / n_set_fixed 14
p1015[0...n]	CO: Fixed speed setpoint 15 / n_set_fixed 15
p1030[0...n]	Motorized potentiometer configuration / Mop configuration
p1037[0...n]	Motorized potentiometer maximum speed / MotP n_max
p1038[0...n]	Motorized potentiometer minimum speed / MotP n_min
p1040[0...n]	Motorized potentiometer starting value / Mop start value
p1047[0...n]	Motorized potentiometer ramp-up time / Mop ramp-up time
p1048[0...n]	Motorized potentiometer ramp-down time / Mop ramp-down time
p1058[0...n]	Jog 1 speed setpoint / Jog 1 n_set
p1059[0...n]	Jog 2 speed setpoint / Jog 2 n_set
p1063[0...n]	Speed limit setpoint channel / n_limit setp
p1080[0...n]	Minimum speed / n_min
p1082[0...n]	Maximum speed / n_max
p1083[0...n]	CO: Speed limit in positive direction of rotation / n_limit pos
p1086[0...n]	CO: Speed limit in negative direction of rotation / n_limit neg
p1091[0...n]	Skip speed 1 / n_skip 1
p1092[0...n]	Skip speed 2 / n_skip 2
p1093[0...n]	Skip speed 3 / n_skip 3
p1094[0...n]	Skip speed 4 / n_skip 4
p1101[0...n]	Skip speed bandwidth / n_skip bandwidth
p1120[0...n]	Ramp-function generator ramp-up time / RFG ramp-up time
p1121[0...n]	Ramp-function generator ramp-down time / RFG ramp-down time
p1123[0...n]	Ramp-function generator minimum ramp-up time / RFG t_RU min
p1127[0...n]	Ramp-function generator minimum ramp-down time / RFG t_RD min
p1130[0...n]	Ramp-function generator initial rounding-off time / RFG t_start_round

p1131[0...n]	Ramp-function generator final rounding-off time / RFG t_end_delay
p1134[0...n]	Ramp-function generator rounding-off type / RFG round-off type
p1135[0...n]	OFF3 ramp-down time / OFF3 t_RD
p1136[0...n]	OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd
p1137[0...n]	OFF3 final rounding-off time / RFG OFF3 t_end_del
p1145[0...n]	Ramp-function generator tracking intensity. / RFG track intens
p1148[0...n]	Ramp-function gen. tolerance for ramp-up and ramp-down active / RFG tol HL/RL act
p1200[0...n]	Flying restart operating mode / FlyRest op_mode
p1202[0...n]	Flying restart search current / FlyRest I_srch
p1203[0...n]	Flying restart search rate factor / FlyRst v_Srch Fact
p1226[0...n]	Threshold for zero speed detection / n_standst n_thresh
p1240[0...n]	Vdc controller configuration (vector control) / Vdc ctr 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_thresh
p1250[0...n]	Vdc controller proportional gain / Vdc_ctrl Kp
p1251[0...n]	Vdc controller integral time / Vdc_ctrl Tn
p1252[0...n]	Vdc controller rate time / Vdc_ctrl t_rate
p1255[0...n]	Vdc_min controller time threshold / Vdc_min t_thresh
p1256[0...n]	Vdc_min controller response (kinetic buffering) / Vdc_min response
p1257[0...n]	Vdc_min controller speed threshold / Vdc_min n_thresh
p1271[0...n]	Flying restart maximum frequency for the inhibited direction / FlyRes f_max dir
p1280[0...n]	Vdc controller configuration (U/f) / Vdc_ctr config U/f
p1283[0...n]	Vdc_max controller dynamic factor (U/f) / Vdc_max dyn_factor
p1284[0...n]	Vdc_max controller time threshold (U/f) / Vdc_max t_thresh
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
p1288[0...n]	Vdc_max controller feedback coupling factor ramp-fct. gen. (U/f) / Vdc_max factor RFG
p1290[0...n]	Vdc controller proportional gain (U/f) / Vdc_ctrl Kp
p1291[0...n]	Vdc controller integral time (U/f) / Vdc_ctrl Tn
p1292[0...n]	Vdc controller rate time (U/f) / Vdc_ctrl t_rate
p1293[0...n]	Vdc min controller output limit (U/f) / Vdc_min outp_lim
p1295[0...n]	Vdc_min controller time threshold (U/f) / Vdc_min t_thresh
p1296[0...n]	Vdc_min controller response (kinetic buffering) (U/f) / Vdc_min response
p1297[0...n]	Vdc_min controller speed threshold (U/f) / Vdc_min n_thresh
p1300[0...n]	Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode
p1302[0...n]	U/f control configuration / U/f config
p1310[0...n]	Starting current (voltage boost) permanent / I_start (Ua) perm
p1311[0...n]	Starting current (voltage boost) when accelerating / I_start accel
p1312[0...n]	Starting current (voltage boost) when starting / I_start start
p1320[0...n]	U/f control programmable characteristic frequency 1 / Uf char f1
p1321[0...n]	U/f control programmable characteristic voltage 1 / Uf char U1
p1322[0...n]	U/f control programmable characteristic frequency 2 / Uf char f2
p1323[0...n]	U/f control programmable characteristic voltage 2 / Uf char U2
p1324[0...n]	U/f control programmable characteristic frequency 3 / Uf char f3
p1325[0...n]	U/f control programmable characteristic voltage 3 / Uf char U3
p1326[0...n]	U/f control programmable characteristic frequency 4 / Uf char f4
p1327[0...n]	U/f control programmable characteristic voltage 4 / Uf char U4
p1331[0...n]	Voltage limiting / U_lim
p1333[0...n]	U/f control FCC starting frequency / U/f FCC f_start
p1334[0...n]	U/f control slip compensation starting frequency / Slip comp start
p1335[0...n]	Slip compensation scaling / Slip comp scal
p1336[0...n]	Slip compensation limit value / Slip comp lim val
p1338[0...n]	U/f mode resonance damping gain / Uf Res_damp gain

## 2 Parameters

### 2.3 Parameters for data sets

p1339[0...n]	U/f mode resonance damping filter time constant / Uf Res_damp T
p1340[0...n]	I_max frequency controller proportional gain / I_max_ctrl Kp
p1341[0...n]	I_max frequency controller integral time / I_max_ctrl Tn
p1345[0...n]	I_max voltage controller proportional gain / I_max_U_ctrl Kp
p1346[0...n]	I_max voltage controller integral time / I_max_U_ctrl Tn
p1349[0...n]	U/f mode resonance damping maximum frequency / Uf res_damp f_max
p1350[0...n]	U/f control soft start / U/f soft start
p1351[0...n]	CO: Motor holding brake starting frequency / Brake f_start
p1400[0...n]	Speed control configuration / n_ctrl config
p1401[0...n]	Flux control configuration / Flux ctrl config
p1402[0...n]	Closed-loop current control and motor model configuration / I_ctrl config
p1416[0...n]	Speed setpoint filter 1 time constant / n_set_filt 1 T
p1452[0...n]	Speed controller speed actual value smoothing time (sensorless) / n_C n_act T_s SL
p1456[0...n]	Speed controller P gain adaptation lower starting point / n_ctrl AdaptKpLow
p1457[0...n]	Speed controller P gain adaptation upper starting point / n_ctrl AdaptKp up
p1458[0...n]	Adaptation factor lower / Adapt_factor lower
p1459[0...n]	Adaptation factor upper / Adapt_factor upper
p1461[0...n]	Speed controller Kp adaptation speed upper scaling / n_ctr Kp n up scal
p1463[0...n]	Speed controller Tn adaptation speed upper scaling / n_ctr Tn n up scal
p1464[0...n]	Speed controller adaptation speed lower / n_ctrl n lower
p1465[0...n]	Speed controller adaptation speed upper / n_ctrl n upper
p1470[0...n]	Speed controller encoderless operation P-gain / n_ctrl SL Kp
p1472[0...n]	Speed controller encoderless operation integral time / n_ctrl SL Tn
p1487[0...n]	Droop compensation torque scaling / Droop M_comp scal
p1488[0...n]	Droop input source / Droop input source
p1489[0...n]	Droop feedback scaling / Droop scal
p1496[0...n]	Acceleration pre-control scaling / a_prectrl scal
p1498[0...n]	Load moment of inertia / Load M_inertia
p1499[0...n]	Accelerating for torque control scaling / a for M_ctrl scal
p1514[0...n]	Supplementary torque 2 scaling / M_suppl 2 scal
p1517[0...n]	Accelerating torque smoothing time constant / M_accel T_smooth
p1520[0...n]	CO: Torque limit upper / M_max upper
p1521[0...n]	CO: Torque limit lower / M_max lower
p1524[0...n]	CO: Torque limit upper scaling / M_max upper scal
p1525[0...n]	CO: Torque limit lower scaling / M_max lower scal
p1530[0...n]	Power limit motoring / P_max mot
p1531[0...n]	Power limit regenerative / P_max gen
p1553[0...n]	Stall limit scaling / Stall limit scal
p1560[0...n]	Moment of inertia estimator accelerating torque threshold value / J_est M thresh
p1561[0...n]	Moment of inertia estimator change time moment of inertia / J_est t J
p1562[0...n]	Moment of inertia estimator change time load / J_est t load
p1563[0...n]	CO: Mom. of inertia estimator load torque direction of rotation pos. / J_est M pos
p1564[0...n]	CO: Mom. of inertia estimator load torque direction of rotation neg. / J_est M neg
p1570[0...n]	CO: Flux setpoint / Flex setp
p1573[0...n]	Flux threshold value magnetizing / Flux thresh magnet
p1574[0...n]	Voltage reserve dynamic / U_reserve dyn
p1580[0...n]	Efficiency optimization / Efficiency opt.
p1582[0...n]	Flux setpoint smoothing time / Flux setp T_smth
p1584[0...n]	Field weakening operation flux setpoint smoothing time / Field weak T_smth
p1586[0...n]	Field weakening characteristic scaling / Field weak scal
p1590[0...n]	Flux controller P gain / Flux controller Kp
p1594[0...n]	Field-weakening controller P gain / Field_ctrl Kp
p1596[0...n]	Field weakening controller integral-action time / Field_ctrl Tn
p1610[0...n]	Torque setpoint static (sensorless) / M_set static
p1611[0...n]	Additional acceleration torque (sensorless) / M_suppl_accel



p1616[0...n]	Current setpoint smoothing time / I_set T_smooth
p1654[0...n]	Curr. setpoint torque-gen. smoothing time field weakening range / Isq_s T_smth FW
p1702[0...n]	Isd current controller pre-control scaling / Isd_ctr_prectrScal
p1703[0...n]	Isq current controller pre-control scaling / Isq_ctr_prectrScal
p1715[0...n]	Current controller P gain / I_ctrl Kp
p1717[0...n]	Current controller integral-action time / I_ctrl Tn
p1726[0...n]	Quadrature arm decoupling scaling / Transv_decpl scal
p1727[0...n]	Quadrature arm decoupling at voltage limit scaling / TrnsvDecplVmaxScal
p1730[0...n]	Isd controller integral component shutdown threshold / Isd ctrl Tn shutd
p1731[0...n]	Isd controller combination current time component / Isd ctr I_combi T1
p1740[0...n]	Gain resonance damping for encoderless closed-loop control / Gain res_damp
p1745[0...n]	Motor model error threshold stall detection / MotMod ThreshStall
p1749[0...n]	Motor model increase changeover speed encoderless operation / Incr n_chng no enc
p1750[0...n]	Motor model configuration / MotMod config
p1755[0...n]	Motor model changeover speed encoderless operation / MotMod n_chgSnsorI
p1758[0...n]	Motor model changeover delay time closed/open-loop control / MotMod t_cl_op
p1759[0...n]	Motor model changeover delay time open/closed-loop control / MotMod t_op_cl
p1764[0...n]	Motor model without encoder speed adaptation Kp / MotMod woE n_adaKp
p1767[0...n]	Motor model without encoder speed adaptation Tn / MotMod woE n_adaTn
p1774[0...n]	Motor model offset voltage compensation alpha / MotMod offs comp A
p1775[0...n]	Motor model offset voltage compensation beta / MotMod offs comp B
p1780[0...n]	Motor model adaptation configuration / MotMod adapt conf
p1784[0...n]	Motor model feedback scaling / MotMod fdbk scal
p1785[0...n]	Motor model Lh adaptation Kp / MotMod Lh Kp
p1786[0...n]	Motor model Lh adaptation integral time / MotMod Lh Tn
r1787[0...n]	Motor model Lh adaptation corrective value / MotMod Lh corr
p1795[0...n]	Motor model kT adaptation integral time / MotMod kT Tn
r1797[0...n]	Motor model kT adaptation corrective value / MotMod kT corr
p1800[0...n]	Pulse frequency setpoint / Pulse freq setp
p1802[0...n]	Modulator mode / Modulator mode
p1803[0...n]	Maximum modulation depth / Modulat depth max
p1806[0...n]	Filter time constant Vdc correction / T_filt Vdc_corr
p1820[0...n]	Reverse the output phase sequence / Outp_ph_seq rev
p1959[0...n]	Rotating measurement configuration / Rot meas config
p2140[0...n]	Hysteresis speed 2 / n_hysteresis 2
p2141[0...n]	Speed threshold 1 / n_thresh val 1
p2142[0...n]	Hysteresis speed 1 / n_hysteresis 1
p2149[0...n]	Monitoring configuration / Monit config
p2150[0...n]	Hysteresis speed 3 / n_hysteresis 3
p2152[0...n]	Delay for comparison n > n_max / Del n > n_max
p2153[0...n]	Speed actual value filter time constant / n_act_filt T
p2155[0...n]	Speed threshold 2 / n_thresh val 2
p2156[0...n]	On delay comparison value reached / t_on cmpr val rchd
p2157[0...n]	Speed threshold 5 / n_thresh val 5
p2158[0...n]	Delay for n_act comparison with speed threshold value 5 / Del compar n_5
p2159[0...n]	Speed threshold 6 / n_thresh val 6
p2160[0...n]	Delay for n_act comparison with speed threshold value 6 / Del compar n_6
p2161[0...n]	Speed threshold 3 / n_thresh val 3
p2162[0...n]	Hysteresis speed n_act > n_max / Hyst n_act>n_max
p2163[0...n]	Speed threshold 4 / n_thresh val 4
p2164[0...n]	Hysteresis speed 4 / n_hysteresis 4
p2166[0...n]	Off delay n_act = n_set / t_del_off n_i=n_so
p2167[0...n]	Switch-on delay n_act = n_set / t_on n_act=n_set
p2170[0...n]	Current threshold value / I_thres
p2171[0...n]	Current threshold value reached delay time / I_thresh rch t_del

## 2 Parameters

### 2.3 Parameters for data sets

p2172[0...n]	DC link voltage threshold value / Vdc thresh val
p2173[0...n]	DC link voltage comparison delay time / t_del Vdc
p2174[0...n]	Torque threshold value 1 / M_thresh val 1
p2175[0...n]	Motor blocked speed threshold / Mot lock n_thresh
p2176[0...n]	Torque threshold value comparison delay time / M_thrsh comp T_del
p2177[0...n]	Motor blocked delay time / Mot lock t_del
p2178[0...n]	Motor stalled delay time / Mot stall t_del
p2179[0...n]	Output load identification current limit / Outp_Id iden I_lim
p2180[0...n]	Output load detection delay time / Out_load det t_del
p2181[0...n]	Load monitoring response / Load monit resp
p2182[0...n]	Load monitoring speed threshold value 1 / n_thresh 1
p2183[0...n]	Load monitoring speed threshold value 2 / n_thresh 2
p2184[0...n]	Load monitoring speed threshold value 3 / n_thresh 3
p2185[0...n]	Load monitoring torque threshold 1 upper / M_thresh 1 upper
p2186[0...n]	Load monitoring torque threshold 1 lower / M_thresh 1 lower
p2187[0...n]	Load monitoring torque threshold 2 upper / M_thresh 2 upper
p2188[0...n]	Load monitoring torque threshold 2 lower / M_thresh 2 lower
p2189[0...n]	Load monitoring torque threshold 3 upper / M_thresh 3 upper
p2190[0...n]	Load monitoring torque threshold 3 lower / M_thresh 3 lower
p2192[0...n]	Load monitoring delay time / Load monit t_del
p2193[0...n]	Load monitoring configuration / Load monit config
p2194[0...n]	Torque threshold value 2 / M_thresh val 2
p2195[0...n]	Torque utilization switch-off delay / M_util t_off
p2196[0...n]	Torque utilization scaling / M_util scal
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
p2216[0...n]	Technology controller fixed value selection method / Tec_ctr FixVal sel
p2230[0...n]	Technology controller motorized potentiometer configuration / Tec_ctr mop config
p2237[0...n]	Technology controller motorized potentiometer maximum value / Tec_ctrl mop max
p2238[0...n]	Technology controller motorized potentiometer minimum value / Tec_ctrl mop min
p2240[0...n]	Technology controller motorized potentiometer starting value / Tec_ctrl mop start
p2247[0...n]	Technology controller motorized potentiometer ramp-up time / Tec_ctr mop t_r-up
p2248[0...n]	Technology controller motorized potentiometer ramp-down time / Tec_ctrMop t_rdown
p2900[0...n]	CO: Fixed value 1 [%] / Fixed value 1 [%]
p2901[0...n]	CO: Fixed value 2 [%] / Fixed value 2 [%]
p2930[0...n]	CO: Fixed value M [Nm] / Fixed value M [Nm]
p3231[0...n]	Load monitoring speed deviation / Load monit n_dev
p3233[0...n]	Torque actual value filter time constant / M_act_filt T
p3320[0...n]	Fluid flow machine power point 1 / Fluid_mach P1
p3321[0...n]	Fluid flow machine speed point 1 / Fluid_mach n1
p3322[0...n]	Fluid flow machine power point 2 / Fluid_mach P2
p3323[0...n]	Fluid flow machine speed point 2 / Fluid_mach n2

p3324[0...n]	Fluid flow machine power point 3 / Fluid_mach P3
p3325[0...n]	Fluid flow machine speed point 3 / Fluid_mach n3
p3326[0...n]	Fluid flow machine power point 4 / Fluid_mach P4
p3327[0...n]	Fluid flow machine speed point 4 / Fluid_mach n4
p3328[0...n]	Fluid flow machine power point 5 / Fluid_mach P5
p3329[0...n]	Fluid flow machine speed point 5 / Fluid_mach n5
p3856[0...n]	Compound braking current / Compound I_brake
r3925[0...n]	Identification final display / Ident final_disp
r3927[0...n]	Motor data identification control word / MotID STW
r3928[0...n]	Rotating measurement configuration / Rot meas config
r3929[0...n]	Motor data identification modulated voltage generation / MotID U_gen mod
p5300[0...n]	Autotuning selection / Autotuning select
p5301[0...n]	One Button Tuning configuration / OBT config
p5302[0...n]	Online tuning configuration / OT config

### 2.3.3 Motor data sets (MDS)

Product: SINAMICS G120 CU240, Version: 4702900, Language: eng, Type: MDS

p0133[0...n]	Motor configuration / Motor config
p0300[0...n]	Motor type selection / Mot type sel
p0301[0...n]	Motor code number selection / Mot code No. sel
p0304[0...n]	Rated motor voltage / Mot U_rated
p0305[0...n]	Rated motor current / Mot I_rated
p0306[0...n]	Number of motors connected in parallel / Motor qty
p0307[0...n]	Rated motor power / Mot P_rated
p0308[0...n]	Rated motor power factor / Mot cos phi rated
p0309[0...n]	Rated motor efficiency / Mot eta_rated
p0310[0...n]	Rated motor frequency / Mot f_rated
p0311[0...n]	Rated motor speed / Mot n_rated
p0312[0...n]	Rated motor torque / Mot M_rated
r0313[0...n]	Motor pole pair number, actual (or calculated) / Mot PolePairNo act
p0314[0...n]	Motor pole pair number / Mot pole pair No.
p0316[0...n]	Motor torque constant / Mot kT
p0318[0...n]	Motor stall current / Mot I_standstill
p0320[0...n]	Motor rated magnetizing current/short-circuit current / Mot I_mag_rated
p0322[0...n]	Maximum motor speed / Mot n_max
p0323[0...n]	Maximum motor current / Mot I_max
p0325[0...n]	Motor pole position identification current 1st phase / Mot PolID I 1st ph
p0326[0...n]	Motor stall torque correction factor / Mot M_stall_corr
p0327[0...n]	Optimum motor load angle / Mot phi_load opt
p0328[0...n]	Motor reluctance torque constant / Mot kT_reluctance
p0329[0...n]	Motor pole position identification current / Mot PolID current
r0330[0...n]	Rated motor slip / Mot slip_rated
r0331[0...n]	Actual motor magnetizing current/short-circuit current / Mot I_mag_rtd act
r0332[0...n]	Rated motor power factor / Mot cos phi rated
r0333[0...n]	Rated motor torque / Mot M_rated
r0334[0...n]	Actual motor-torque constant / Mot kT act
p0335[0...n]	Motor cooling type / Mot cool type
r0337[0...n]	Rated motor EMF / Mot EMF_rated
p0341[0...n]	Motor moment of inertia / Mot M_mom of inert
p0342[0...n]	Ratio between the total and motor moment of inertia / Mot MomInert Ratio
r0343[0...n]	Rated motor current identified / Mot I_rated ident
p0344[0...n]	Motor weight (for the thermal motor model) / Mot weight th mod
r0345[0...n]	Nominal motor starting time / Mot t_start_rated

## 2 Parameters

### 2.3 Parameters for data sets

p0346[0...n]	Motor excitation build-up time / Mot t_excitation
p0347[0...n]	Motor de-excitation time / Mot t_de-excitat
p0350[0...n]	Motor stator resistance cold / Mot R_stator cold
p0352[0...n]	Cable resistance / R_cable
p0354[0...n]	Motor rotor resistance cold / Mot R_r cold
p0356[0...n]	Motor stator leakage inductance / Mot L_stator leak.
p0357[0...n]	Motor stator inductance d axis / Mot L_stator d
p0358[0...n]	Motor rotor leakage inductance / Mot L_rot leak
p0360[0...n]	Motor magnetizing inductance / Mot Lh
p0362[0...n]	Motor saturation characteristic flux 1 / Mot saturat.flux 1
p0363[0...n]	Motor saturation characteristic flux 2 / Mot saturat.flux 2
p0364[0...n]	Motor saturation characteristic flux 3 / Mot saturat.flux 3
p0365[0...n]	Motor saturation characteristic flux 4 / Mot saturat.flux 4
p0366[0...n]	Motor saturation characteristic I_mag 1 / Mot sat. I_mag 1
p0367[0...n]	Motor saturation characteristic I_mag 2 / Mot sat. I_mag 2
p0368[0...n]	Motor saturation characteristic I_mag 3 / Mot sat. I_mag 3
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 rated R_rotor
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
p0601[0...n]	Motor temperature sensor type / Mot_temp_sens type
p0604[0...n]	Mot_temp_mod 2/KTY alarm threshold / Mod 2/KTY A thresh
p0605[0...n]	Mot_temp_mod 1/2 threshold / Mod 1/2 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
p0614[0...n]	Thermal resistance adaptation reduction factor / Therm R_adapt red
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 during commissioning / 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 rotor temp
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
p0826[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]	PollID technique / PollID technique
p1999[0...n]	Ang. commutation offset calibr. and PollID scaling / Com_ang_offs scal
r3926[0...n]	Voltage generation alternating base voltage amplitude / U_gen altern base
r5398[0...n]	Mot_temp_mod 3 alarm threshold image p5390 / A thr image p5390
r5399[0...n]	Mot_temp_mod 3 fault threshold image p5391 / F thr image p5391

### 2.3.4 Power unit Data Sets (PDS)

Product: SINAMICS G120 CU240, Version: 4702900, 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

### 2.3.5 Encoder Data Sets (EDS)

Product: SINAMICS G120 CU240, Version: 4702900, Language: eng, Type: EDS

p0422[0...n]	Absolute encoder linear measuring step resolution / Enc abs meas step
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## 2.4 BICO parameters (connectors/binectors)

### 2.4.1 Binector inputs (BI)

Product: SINAMICS G120 CU240, Version: 4702900, 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
p0860	BI: Line contactor feedback signal / Line contact feedb
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
p1201[0...n]	BI: Flying 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
p1502[0...n]	BI: Freeze moment of inertia estimator / J_estim freeze

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
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
p2286[0...n]	BI: Hold technology controller integrator / Tec_ctr integ hold
p3111[0...n]	BI: External fault 3 enable / Ext fault 3 enab
p3112[0...n]	BI: External fault 3 enable negated / Ext flt 3 enab neg
p3232[0...n]	BI: Load monitoring failure detection / Load_moni 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
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

### 2.4.2 Connector inputs (CI)

Product: SINAMICS G120 CU240, Version: 4702900, Language: eng, Type: CI

p0641[0...n]	CI: Current limit variable / Curr lim var
p0771[0...1]	CI: CU analog outputs signal source / CU AO S_src
p1042[0...n]	CI: Motorized potentiometer automatic setpoint / Mop auto setpoint
p1044[0...n]	CI: Motorized potentiometer setting value / Mop set val
p1051[0...n]	CI: Speed limit RFG positive direction of rotation / n_limit RFG pos
p1052[0...n]	CI: Speed limit RFG negative direction of rotation / n_limit RFG neg
p1070[0...n]	CI: Main setpoint / Main setpoint
p1071[0...n]	CI: Main setpoint scaling / Main setp scal
p1075[0...n]	CI: Supplementary setpoint / Suppl setp
p1076[0...n]	CI: Supplementary setpoint scaling / Suppl setp scal
p1085[0...n]	CI: Speed limit in positive direction of rotation / n_limit pos
p1088[0...n]	CI: Speed limit in negative direction of rotation / n_limit neg
p1098[0...n]	CI: Skip speed scaling / n_skip scal
p1106[0...n]	CI: Minimum speed signal source / n_min s_src
p1109[0...n]	CI: Total setpoint / Total setp
p1138[0...n]	CI: Ramp-function generator ramp-up time scaling / RFG t_RU scal
p1139[0...n]	CI: Ramp-function generator ramp-down time scaling / RFG t_RD scal
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
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_ctr M_sv MHB
p1478[0...n]	CI: Speed controller integrator setting value / n_ctr integ_setVal
p1479[0...n]	CI: Speed controller integrator setting value scaling / n_ctr I_val scal
p1486[0...n]	CI: Droop compensation torque / Droop M_comp
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
p2016[0...3]	CI: Comm IF USS PZD send word / Comm USS send word
p2051[0...13]	CI: PROFIdrive PZD send word / PZD send word
p2061[0...12]	CI: PROFIBUS PZD send double word / PZD send DW
p2099[0...1]	CI: Connector-binector converter signal source / Con/bin S_src
p2151[0...n]	CI: Speed setpoint for messages/signals / n_set for msg
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
p2289[0...n]	CI: Technology controller pre-control signal / Tec_ctr prectr_sig
p2296[0...n]	CI: Technology controller output scaling / Tec_ctrl outp scal
p2297[0...n]	CI: Technology controller maximum limit signal source / Tec_ctrMaxLimS_src
p2298[0...n]	CI: Technology controller minimum limit signal source / Tec_ctrl min_l s_s
p2299[0...n]	CI: Technology controller limit offset / Tech_ctrl lim offs
p3230[0...n]	CI: Load monitoring speed actual value / Load monit n_act
p20094[0...3]	CI: ADD 0 inputs / ADD 0 inputs
p20098[0...3]	CI: ADD 1 inputs / ADD 1 inputs
p20102[0...1]	CI: SUB 0 inputs / SUB 0 inputs
p20106[0...1]	CI: SUB 1 inputs / SUB 1 inputs
p20110[0...3]	CI: MUL 0 inputs / MUL 0 inputs
p20114[0...3]	CI: MUL 1 inputs / MUL 1 inputs
p20118[0...1]	CI: DIV 0 inputs / DIV 0 inputs
p20123[0...1]	CI: DIV 1 inputs / DIV 1 inputs
p20128	CI: AVA 0 input X / AVA 0 input X
p20133	CI: AVA 1 input X / AVA 1 input X
p20218[0...1]	CI: NSW 0 inputs / NSW 0 inputs
p20223[0...1]	CI: NSW 1 inputs / NSW 1 inputs
p20228	CI: LIM 0 input X / LIM 0 input X
p20236	CI: LIM 1 input X / LIM 1 input X
p20244[0...1]	CI: PT1 0 inputs / PT1 0 inputs
p20250[0...1]	CI: PT1 1 inputs / PT1 1 inputs
p20256[0...1]	CI: INT 0 inputs / INT 0 inputs
p20266	CI: LVM 0 input X / LVM 0 input X
p20275	CI: LVM 1 input X / LVM 1 input X
p20284	CI: DIF 0 input X / DIF 0 input X
p20308[0...3]	CI: ADD 2 inputs / ADD 2 inputs
p20312[0...1]	CI: NCM 0 inputs / NCM 0 inputs
p20318[0...1]	CI: NCM 1 inputs / NCM 1 inputs
p20372	CI: PLI 0 input X / PLI 0 input X
p20378	CI: PLI 1 input X / PLI 1 input X

### 2.4.3 Binector outputs (BO)

Product: SINAMICS G120 CU240, Version: 4702900, 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
r20210	BO: BSW 0 output Q / BSW 0 output Q
r20215	BO: BSW 1 output Q / BSW 1 output Q
r20232	BO: LIM 0 input quantity at the upper limit QU / LIM 0 QU

r20233	BO: LIM 0 input quantity at the lower limit QL / LIM 0 QL
r20240	BO: LIM 1 input quantity at the upper limit QU / LIM 1 QU
r20241	BO: LIM 1 input quantity at the lower limit QL / LIM 1 QL
r20262	BO: INT 0 integrator at the upper limit QU / INT 0 QU
r20263	BO: INT 0 integrator at the lower limit QL / INT 0 QL
r20270	BO: LVM 0 input quantity above interval QU / LVM 0 X above QU
r20271	BO: LVM 0 input quantity within interval QM / LVM 0 X within QM
r20272	BO: LVM 0 input quantity below interval QL / LVM 0 X below QL
r20279	BO: LVM 1 input quantity above interval QU / LVM 1 X above QU
r20280	BO: LVM 1 input quantity within interval QM / LVM 1 X within QM
r20281	BO: LVM 1 input quantity below interval QL / LVM 1 X below QL
r20301	BO: NOT 4 inverted output / NOT 4 inv output
r20305	BO: NOT 5 inverted output / NOT 5 inv output
r20313	BO: NCM 0 output QU / NCM 0 output QU
r20314	BO: NCM 0 output QE / NCM 0 output QE
r20315	BO: NCM 0 output QL / NCM 0 output QL
r20319	BO: NCM 1 output QU / NCM 1 output QU
r20320	BO: NCM 1 output QE / NCM 1 output QE
r20321	BO: NCM 1 output QL / NCM 1 output QL
r20325	BO: RSR 2 output Q / RSR 2 output Q
r20326	BO: RSR 2 inverted output QN / RSR 2 inv outp QN
r20330	BO: DFR 2 output Q / DFR 2 output Q
r20331	BO: DFR 2 inverted output QN / DFR 2 inv outp QN
r20336	BO: PDE 2 output Q / PDE 2 output Q
r20341	BO: PDE 3 output Q / PDE 3 output Q
r20346	BO: PDF 2 output Q / PDF 2 output Q
r20351	BO: PDF 3 output Q / PDF 3 output Q
r20356	BO: MFP 2 output Q / MFP 2 output Q
r20361	BO: MFP 3 output Q / MFP 3 output Q

### 2.4.4 Connector outputs (CO)

Product: SINAMICS G120 CU240, Version: 4702900, 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 thermal / Mot_util therm
r0035	CO: Motor temperature / Mot temp
r0036	CO: Power unit overload I2t / PU overload I2t
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...2]	CO: Speed actual value / n_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

## 2 Parameters

### 2.4 BICO parameters (connectors/binectors)

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
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 / Flex 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
r0586	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
p1012[0...n]	CO: Fixed speed setpoint 12 / n_set_fixed 12
p1013[0...n]	CO: Fixed speed setpoint 13 / n_set_fixed 13
p1014[0...n]	CO: Fixed speed setpoint 14 / n_set_fixed 14
p1015[0...n]	CO: Fixed speed setpoint 15 / n_set_fixed 15
r1024	CO: Fixed speed setpoint effective / n_set_fixed eff
r1045	CO: Mot. potentiometer speed setp. in front of ramp-fct. gen. / Mop n_set bef RFG
r1050	CO: Motor. potentiometer setpoint after the ramp-function generator / Mop setp after RFG
r1073	CO: Main setpoint effective / Main setpoint eff
r1077	CO: Supplementary setpoint effective / Suppl setpoint eff
r1078	CO: Total setpoint effective / Total setpoint eff
p1083[0...n]	CO: Speed limit in positive direction of rotation / n_limit pos
r1084	CO: Speed limit positive effective / n_limit pos eff
p1086[0...n]	CO: Speed limit in negative direction of rotation / n_limit neg
r1087	CO: Speed limit negative effective / n_limit neg eff
r1112	CO: Speed setpoint after minimum limiting / n_set aft min_lim
r1114	CO: Setpoint after the direction limiting / Setp after limit
r1119	CO: Ramp-function generator setpoint at the input / RFG setp at inp
r1149	CO: Ramp-function generator acceleration / RFG acceleration
r1150	CO: Ramp-function generator speed setpoint at the output / RFG n_set at outp
r1169	CO: Speed controller speed setpoints 1 and 2 / n_ctrl n_set 1/2
r1170	CO: Speed controller setpoint sum / n_ctrl setp sum
r1258	CO: Vdc controller output / Vdc_ctrl output
r1298	CO: Vdc controller output (U/f) / Vdc_ctrl output
r1337	CO: Actual slip compensation / Slip comp act val
r1343	CO: I_max controller frequency output / I_max_ctrl f_outp
r1348	CO: U/f control Eco factor actual value / U/f Eco fac act v

p1351[0...n]	CO: Motor holding brake starting frequency / Brake f_start
r1438	CO: Speed controller speed setpoint / n_ctrl n_set
r1445	CO: Actual speed smoothed / n_act smooth
r1454	CO: Speed controller system deviation I component / n_ctrl sys dev Tn
r1468	CO: Speed controller P-gain effective / n_ctr Kp eff
r1482	CO: Speed controller I torque output / n_ctrl I-M_outp
r1490	CO: Droop feedback speed reduction / Droop n_reduction
r1493	CO: Moment of inertia total, scaled / M_mom inert tot_sc
r1508	CO: Torque setpoint before supplementary torque / M_set bef. M_suppl
r1516	CO: Supplementary torque and acceleration torque / M_suppl + M_accel
r1518[0...1]	CO: Accelerating torque / M_accel
p1520[0...n]	CO: Torque limit upper / M_max upper
p1521[0...n]	CO: Torque limit lower / M_max lower
p1524[0...n]	CO: Torque limit upper scaling / M_max upper scal
p1525[0...n]	CO: Torque limit lower scaling / M_max lower scal
r1526	CO: Torque limit upper without offset / M_max up w/o offs
r1527	CO: Torque limit lower without offset / M_max low w/o offs
r1538	CO: Upper effective torque limit / M_max upper eff
r1539	CO: Lower effective torque limit / M_max lower eff
r1547[0...1]	CO: Torque limit for speed controller output / M_max outp n_ctrl
r1548[0...1]	CO: Stall current limit torque-generating maximum / Isq_max stall
p1563[0...n]	CO: Mom. of inertia estimator load torque direction of rotation pos. / J_est M pos
p1564[0...n]	CO: Mom. of inertia estimator load torque direction of rotation neg. / J_est M neg
p1570[0...n]	CO: Flux setpoint / Flex setp
r1593[0...1]	CO: Field weakening controller / flux controller output / Field/Fl_ctrl outp
r1597	CO: Field weakening controller output / Field_ctrl outp
r1598	CO: Total flux setpoint / Flux setp total
r1718	CO: Isq controller output / Isq_ctrl outp
r1723	CO: Isd controller output / Isd_ctrl outp
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 / Act 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 befRFG
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 aftFlt
r2266	CO: Technology controller actual value after filter / Tec_ctr act aftFlt
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_lim
p2292	CO: Technology controller minimum limiting / Tec_ctrl min_lim
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 [%]
r2902[0...14]	CO: Fixed values [%] / Fixed values [%]
p2930[0...n]	CO: Fixed value M [Nm] / Fixed value M [Nm]
r3131	CO: Actual fault value / Act fault val
r3132	CO: Actual component number / Comp_no act
r9712	CO: SI Motion diagnostics pos. act. val. motor side (processor 1) / SI Mtn s_act motP1
r9713[0...5]	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
r20099	CO: ADD 1 output Y / ADD 1 output Y
r20103	CO: SUB 0 difference Y / SUB 0 difference Y
r20107	CO: SUB 1 difference Y / SUB 1 difference Y
r20111	CO: MUL 0 product Y / MUL 0 product Y
r20115	CO: MUL 1 product Y / MUL 1 product Y
r20119[0...2]	CO: DIV 0 quotient / DIV 0 quotient
r20124[0...2]	CO: DIV 1 quotient / DIV 1 quotient
r20129	CO: AVA 0 output Y / AVA 0 output Y
r20134	CO: AVA 1 output Y / AVA 1 output Y
r20220	CO: NSW 0 output Y / NSW 0 output Y
r20225	CO: NSW 1 output Y / NSW 1 output Y
r20231	CO: LIM 0 output Y / LIM 0 output Y
r20239	CO: LIM 1 output Y / LIM 1 output Y
r20247	CO: PT1 0 output Y / PT1 0 output Y
r20253	CO: PT1 1 output Y / PT1 1 output Y
r20261	CO: INT 0 output Y / INT 0 output Y
r20286	CO: DIF 0 output Y / DIF 0 output Y
r20309	CO: ADD 2 output Y / ADD 2 output Y
r20373	CO: PLI 0 output Y / PLI 0 output Y
r20379	CO: PLI 1 output Y / PLI 1 output Y

#### 2.4.5 Connector/binector outputs (CO/BO)

Product: SINAMICS G120 CU240, Version: 4702900, 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
r0863.1	CO/BO: Drive coupling status word/control word / CoupleZSW/STW
r0898.0...14	CO/BO: Control word sequence control / STW seq_ctrl
r0899.0...13	CO/BO: Status word sequence control / ZSW seq_ctrl
r1099.0	CO/BO: Skip band status word / Skip band ZSW
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...26	CO/BO: Status word speed controller / ZSW n_ctrl
r1408.0...14	CO/BO: Status word current controller / ZSW I_ctrl
r1838.0...15	CO/BO: Gating unit status word 1 / Gating unit ZSW1
r2129.0...15	CO/BO: Faults/alarms trigger signal / F/A trigger signal
r2135.12...15	CO/BO: Status word faults/alarms 2 / ZSW fault/alarm 2
r2138.7...15	CO/BO: Control word faults/alarms / STW fault/alarm
r2139.0...15	CO/BO: Status word faults/alarms 1 / ZSW fault/alarm 1
r2197.0...13	CO/BO: Status word monitoring 1 / ZSW monitor 1
r2198.0...13	CO/BO: Status word monitoring 2 / ZSW monitor 2
r2199.0...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_ctrl 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/DC quantity control status word / Comp-br/DC_ctr 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 drive-integrated status signals (processor 1) / SI Mtn int stat P1
r9722.0...13	CO/BO: SI Motion drive-integrated status signals (processor 1) / SI Mtn int stat P1
r9723.0...16	CO/BO: SI Motion diagnostic signals integrated in the drive / SI Mtn integ diag
r9734.0...14	CO/BO: SI Safety Info Channel status word S_ZSW1B / SIC S_ZSW1B
r9742.0...15	CO/BO: SI Motion drive-integrated status signals (processor 2) / SI Mtn int stat P2
r9772.0...21	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...21	CO/BO: SI status (processor 2) / SI Status P2
r10051.0...2	CO/BO: SI Motion digital inputs status (processor 1) / SI DI status P1
r10151.0...2	CO/BO: SI Motion digital inputs status (processor 2) / SI DI status P2

## 2.5 Parameters for write protection and know-how protection

### 2.5.1 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: 4702900, 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
p8805	Identification and maintenance 4 configuration / I&M 4 config
p8806[0...53]	Identification and Maintenance 1 / I&M 1
p8807[0...15]	Identification and Maintenance 2 / I&M 2
p8808[0...53]	Identification and Maintenance 3 / I&M 3
p8809[0...53]	Identification and Maintenance 4 / I&M 4
p9400	Safely remove memory card / Mem_card rem
p9484	BICO interconnections search signal source / BICO S_src srch

### 2.5.2 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: 4702900, 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
p2040	Fieldbus interface monitoring time / Fieldbus t_monit
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
p8805	Identification and maintenance 4 configuration / I&M 4 config
p8806[0...53]	Identification and Maintenance 1 / I&M 1
p8807[0...15]	Identification and Maintenance 2 / I&M 2
p8808[0...53]	Identification and Maintenance 3 / I&M 3
p8809[0...53]	Identification and Maintenance 4 / I&M 4
p8980	Ethernet/IPprofile / Eth/IP profile
p8981	Ethernet/IP ODVA STOP mode / Eth/IP ODVA STOP



p8982	Ethernet/IP ODVA speed scaling / Eth/IP ODVA n scal
p8983	Ethernet/IP ODVA torque scaling / Eth/IP ODVA M scal
p9400	Safely remove memory card / Mem_card rem
p9484	BICO interconnections search signal source / BICO S_src srch

### 2.5.3 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: 4702900, 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
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 PZD telegram selection / PZD 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 / PZD telegr 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

## 2.6 Quick commissioning (p0010 = 1)

The parameters required for the quick commissioning (p0010=1) are shown in the following table:

Table 2-7 Quick commissioning (p0010 = 1)

Par. no.	Name	Access level		Changeable
p0010	Drive, commissioning parameter filter	1		C(1)T
p0015	Macro drive unit	1		C,C(1)
p0100	IEC/NEMA motor standard	1		C(1)
p0205	Power unit application	1		C(1,2)
p0230	Drive filter type, motor side	1		C(1,2)
p0300	Motor type selection	2		C(1,3)
p0301	Motor code number selection	2		C(1,3)
p0304	Rated motor voltage	1		C(1,3)
p0305	Rated motor current	1		C(1,3)
p0306	Number of motors connected in parallel	1		C(1,3)
p0307	Rated motor power	1		C(1,3)
p0308	Rated motor power factor	1		C(1,3)
p0309	Rated motor efficiency	1		C(1,3)
p0310	Rated motor frequency	1		C(1,3)
p0311	Rated motor speed	1		C(1,3)
p0314	Motor pole pair number	3		C(1,3)
p0316	Motor torque constant	3		C(1,3)UT
p0322	Maximum motor speed	1		C(1,3)
p0323	Maximum motor current	1		C(1,3)
p0335	Motor cooling type	2		C(1,3)T
p0500	Technology application	4	PM230	C(1,5)T
p0500	Technology application	2	PM240 PM250 PM260, PM330	C(1,5)T
p0640	Current limit	2		C(1,3)UT
p0922	PROFIdrive telegram selection	1		C(1)T
p0970	Reset drive parameters	1		C(1,30)
p1080	Minimum speed	1		C(1)T
p1082	Maximum speed	1		C(1)T
p1120	Ramp-function generator ramp-up time	1		C(1)UT
p1121	Ramp-function generator ramp-down time	1		C(1)UT
p1135	OFF3 ramp-down time	2		C(1)UT
p1300	Open-loop/closed-loop control operating mode	2		C(1)T
p1500	Torque setpoint selection	2		C(1)T

Table 2-7 Quick commissioning (p0010 = 1), continued

Par. no.	Name	Access level		Changeable
p1900	Motor data identification and rotating measurement	2		C(1)T
p1905	Parameter tuning selection	1		C(1)T
p2196	Torque utilization scaling	1		C(1,3)UT
p3900	Completion of quick commissioning	1		C(1)

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.

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**Note**

This only applies for the quick commissioning.

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# Function diagrams

## Content

3.1	Table of contents	510
3.2	Explanation of the function diagrams	515
3.3	Input/output terminals	520
3.4	PROFenergy	535
3.5	PROFdrive communication (PROFIBUS/PROFINET)	538
3.6	Communication, fieldbus interface (USS, MODBUS)	553
3.7	Internal control/status words	560
3.8	Brake control	579
3.9	Safety Integrated Basic Functions	581
3.10	Safety Integrated Extended Functions	587
3.11	Safety Integrated PROFIsafe	596
3.12	Setpoint channel	599
3.13	Vector control	610
3.14	Technology functions	636
3.15	Free function blocks	638
3.16	Technology controller	659
3.17	Signals and monitoring functions	664
3.18	Diagnostics	675
3.19	Data sets	681

## 3.1 Table of contents

<b>3.2 Explanation of the function diagrams</b> .....	515
1020 – Explanation of the symbols (part 1) .....	516
1021 – Explanation of the symbols (part 2) .....	517
1022 – Explanation of the symbols (part 3) .....	518
1030 – Handling BICO technology .....	519
<b>3.3 Input/output terminals</b> .....	520
2201 – Connection overview CU240B-2 .....	521
2202 – Connection overview CU240E-2 .....	522
2220 – CU240B-2: Digital inputs, electrically isolated (DI 0 ... DI 3) .....	523
2221 – CU240E-2: Digital inputs, electrically isolated (DI 0 ... DI 5) .....	524
2240 – CU240B-2: Digital output (DO 0) .....	525
2242 – CU240E-2: Digital outputs (DO 0 ... DO 2) .....	526
2250 – CU240B-2: Analog input 0 (AI 0) .....	527
2251 – CU240E-2: Analog inputs 0 ... 1 (AI 0 ... AI 1) .....	528
2255 – CU240B-2: Analog inputs as digital inputs (DI 11) .....	529
2256 – CU240E-2: Analog inputs as digital inputs (DI 11 ... DI 12) .....	530
2260 – CU240B-2: Analog output 0 (AO 0) .....	531
2261 – CU240E-2: Analog outputs 0 ... 1 (AO 0 ... AO 1) .....	532
2272 – Two-wire control .....	533
2273 – Three-wire control .....	534
<b>3.4 PROFlenergy</b> .....	535
2381 – Control commands and interrogation commands .....	536
2382 – States .....	537
<b>3.5 PROFIdrive communication (PROFIBUS/PROFINET)</b> .....	538
2401 – Overview .....	539
2410 – PROFIBUS (PB) / PROFINET (PN), addresses and diagnostics .....	540
2420 – Telegrams and process data (PZD) .....	541
2440 – PZD receive signals interconnection .....	542
2441 – STW1 control word interconnection (p2038 = 2) .....	543
2442 – STW1 control word interconnection (p2038 = 0) .....	544
2446 – STW3 control word interconnection .....	545
2450 – PZD send signals interconnection .....	546
2451 – ZSW1 status word interconnection (p2038 = 2) .....	547

2452 – ZSW1 status word interconnection (p2038 = 0) .....	548
2456 – ZSW3 status word interconnection .....	549
2468 – Receive telegram, free interconnection via BICO (p0922 = 999) .....	550
2470 – Send telegram, free interconnection via BICO (p0922 = 999) .....	551
2472 – Status words, free interconnection .....	552
<b>3.6 Communication, fieldbus interface (USS, MODBUS) .....</b>	<b>553</b>
9310 – Configuration, addresses and diagnostics .....	554
9342 – STW1 control word interconnection .....	555
9352 – ZSW1 status word interconnection .....	556
9360 – Receive telegram, free interconnection via BICO (p0922 = 999) .....	557
9370 – Send telegram, free interconnection via BICO (p0922 = 999) .....	558
9372 – Status words, free interconnection .....	559
<b>3.7 Internal control/status words .....</b>	<b>560</b>
2501 – Control word, sequence control .....	561
2503 – Status word, sequence control .....	562
2505 – Control word, setpoint channel .....	563
2510 – Status word 1 (r0052) .....	564
2511 – Status word 2 (r0053) .....	565
2512 – Control word 1 (r0054) .....	566
2513 – Control word 2 (r0055) .....	567
2520 – Control word, speed controller .....	568
2522 – Status word, speed controller .....	569
2526 – Status word, closed-loop control .....	570
2530 – Status word, closed-loop current control .....	571
2534 – Status word, monitoring functions 1 .....	572
2536 – Status word, monitoring functions 2 .....	573
2537 – Status word, monitoring functions 3 .....	574
2546 – Control word, faults/alarms .....	575
2548 – Status word, faults/alarms 1 and 2 .....	576
2610 – Sequence control - sequencer .....	577
2634 – Sequence control - missing enable signals .....	578
<b>3.8 Brake control .....</b>	<b>579</b>
2701 – Basic brake control .....	580

<b>3.9 Safety Integrated Basic Functions</b> .....	581
2800 – Parameter manager .....	582
2802 – Monitoring functions and faults/alarms .....	583
2804 – Status words .....	584
2810 – STO (Safe Torque Off) .....	585
2812 – F-DI (Fail-safe Digital Input) .....	586
<b>3.10 Safety Integrated Extended Functions</b> .....	587
2819 – SS1 (Safe Stop 1), internal STOP A, B, F .....	588
2820 – SLS (Safely-Limited Speed) .....	589
2823 – SSM (Safe Speed Monitor) .....	590
2824 – SDI (Safe Direction) .....	591
2840 – Control and status word .....	592
2850 – Fail-safe digital inputs (F-DI 0 ... F-DI 2) .....	593
2855 – Extended Functions via F-DI (p9601.2 = 1 and p9601.3 = 0) .....	594
2858 – Extended Functions via PROFIsafe (9601.2 = 1 and 9601.3 = 1) .....	595
<b>3.11 Safety Integrated PROFIsafe</b> .....	596
2915 – Standard telegrams .....	597
2917 – Manufacturer-specific telegrams .....	598
<b>3.12 Setpoint channel</b> .....	599
3001 – Overview .....	600
3010 – Fixed speed setpoints, binary selection (p1016 = 2) .....	601
3011 – Fixed speed setpoints, direct selection (p1016 = 1) .....	602
3020 – Motorized potentiometer .....	603
3030 – Main/supplementary setpoint, setpoint scaling, jogging .....	604
3040 – Direction limitation and direction reversal .....	605
3050 – Skip frequency bands and speed limitations .....	606
3060 – Basic ramp-function generator .....	607
3070 – Extended ramp-function generator .....	608
3080 – Ramp-function generator selection, status word, tracking .....	609
<b>3.13 Vector control</b> .....	610
6020 – Speed control and generation of the torque limits, overview .....	611
6030 – Speed setpoint, droop .....	612
6031 – Pre-control balancing, acceleration model .....	613
6040 – Speed controller .....	614



6050 – Kp_n-/Tn_n adaptation .....	615
6060 – Torque setpoint .....	616
6220 – Vdc_max controller and Vdc_min controller (vector control, PM230/PM240) .....	617
6300 – U/f control, overview .....	618
6301 – U/f characteristic and voltage boost .....	619
6310 – Resonance damping and slip compensation (U/f) .....	620
6320 – Vdc_max controller and Vdc_min controller (PM230/PM240), (U/f) .....	621
6490 – Speed control configuration .....	622
6491 – Flux control configuration .....	623
6630 – Upper/lower torque limit .....	624
6640 – Current/power/torque limits .....	625
6700 – Current control, overview .....	626
6710 – Current setpoint filter .....	627
6714 – Iq and Id controllers .....	628
6721 – Id setpoint (PEM, p0300 = 2xx) .....	629
6722 – Field weakening characteristic, Id setpoint (ASM, p0300 = 1) .....	630
6723 – Field weakening controller, flux controller (ASM, p0300 = 1) .....	631
6724 – Field weakening controller (PEM, p0300 = 2xx) .....	632
6730 – Interface to the Power Module (ASM, p0300 = 1) .....	633
6731 – Interface to the Power Module (PEM, p0300 = 2xx) .....	634
6799 – Display signals .....	635
<b>3.14 Technology functions</b> .....	<b>636</b>
7017 – DC brake (p0300 = 1) .....	637
<b>3.15 Free function blocks</b> .....	<b>638</b>
7200 – Sampling times of the runtime groups .....	639
7210 – AND (AND function blocks with 4 inputs) .....	640
7212 – OR (OR function blocks with 4 inputs) .....	641
7214 – XOR (XOR function blocks with 4 inputs) .....	642
7216 – NOT (inverter) .....	643
7220 – ADD (adder with 4 inputs), SUB (subtractor) .....	644
7222 – MUL (multiplier), DIV (divider) .....	645
7224 – AVA (absolute value generator) .....	646
7225 – NCM (numeric comparator) .....	647
7226 – PLI (polyline scaling) .....	648
7230 – MFP (pulse generator), PCL (pulse contractor) .....	649
7232 – PDE (ON delay) .....	650

7233 – PDF (OFF delay) .....	651
7234 – PST (pulse stretcher) .....	652
7240 – RSR (RS flip-flop), DFR (D flip-flop) .....	653
7250 – BSW (binary change-over switch), NSW (numeric change-over switch) .....	654
7260 – LIM (limiter) .....	655
7262 – PT1 (smoothing element) .....	656
7264 – INT (integrator), DIF (derivative-action element) .....	657
7270 – LVM (double-sided limit monitor with hysteresis) .....	658
<b>3.16 Technology controller</b> .....	<b>659</b>
7950 – Fixed value selection binary (p2216 = 2) .....	660
7951 – Fixed value selection direct (p2216 = 1) .....	661
7954 – Motorized potentiometer .....	662
7958 – Closed-loop control .....	663
<b>3.17 Signals and monitoring functions</b> .....	<b>664</b>
8005 – Overview .....	665
8010 – Speed signals 1 .....	666
8011 – Speed signals 2 .....	667
8012 – Torque signals, motor blocked/stalled .....	668
8013 – Load monitoring .....	669
8014 – Thermal monitoring, power unit .....	670
8016 – Thermal monitoring, motor .....	671
8017 – Thermal motor models .....	672
8020 – Monitoring functions 1 .....	673
8021 – Monitoring functions 2 .....	674
<b>3.18 Diagnostics</b> .....	<b>675</b>
8050 – Overview .....	676
8060 – Fault buffer .....	677
8065 – Alarm buffer .....	678
8070 – Faults/alarms trigger word (r2129) .....	679
8075 – Faults/alarms configuration .....	680
<b>3.19 Data sets</b> .....	<b>681</b>
8560 – Command Data Sets (CDS) .....	682
8565 – Drive Data Sets (DDS) .....	683

## 3.2 Explanation of the function diagrams

### Function diagrams

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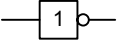
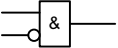
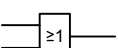
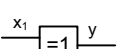
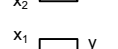
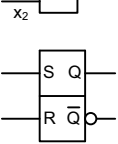
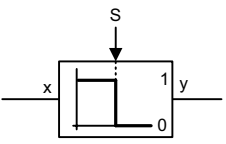
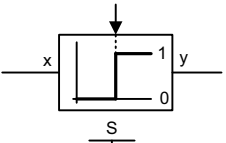
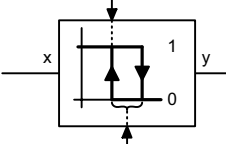
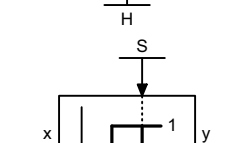
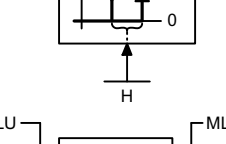
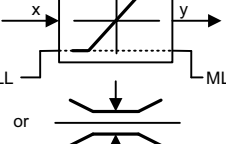
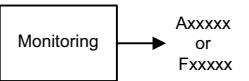


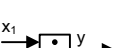
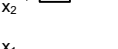
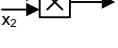
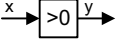
1020 – Explanation of the symbols (part 1)	516
1021 – Explanation of the symbols (part 2)	517
1022 – Explanation of the symbols (part 3)	518
1030 – Handling BICO technology	519

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Fig. 3-1 1020 – Explanation of the symbols (part 1)

<b>Parameters</b>		<b>Connectors</b>		<b>Binectors</b>		<b>Data sets</b>	
<b>Symbol</b> Parameter name [Unit] rxxx[y..z]	<b>Meaning</b> Monitoring parameter with unit [Unit] and index range [y..z] or data set [C/D]	<b>Symbol</b> Parameter name pxxxx[y..z] (Def)	<b>Meaning</b> Connector input CI with index range [y..z] or data set [C/D] and factory setting (Def *)	<b>Symbol</b> Parameter name pxxxx[y..z] (Def.y)	<b>Meaning</b> Binector input BI with with index range [y..z] or data set [C/D] and factory setting.bit number (Def)	<b>Symbol</b> pxxxx[C]	<b>Meaning</b> Parameter belongs to the Command Data Set (CDS).
<b>Symbol</b> Parameter name from ... to [Unit] pxxxx[C/D] (Def)	<b>Meaning</b> Setting parameter with min/max value and unit [Unit] data set [C/D] and factory setting (Def *)	<b>Symbol</b> Parameter name [Unit] rxxx[y..z]	<b>Meaning</b> Connector output CO with unit [Unit] and with index range [y..z]	<b>Symbol</b> Parameter name rxxxx	<b>Meaning</b> Binector output BO	<b>Symbol</b> pxxxx[D]	<b>Meaning</b> Parameter belongs to the Drive Data Set (DDS).
		<b>Connectors/binectors</b>		<b>Pre-assigned connectors and binectors</b>		<b>Symbol</b> pxxxx[E]	<b>Meaning</b> Parameter belongs to the Encoder Data Set (EDS).
		<b>Symbol</b> Parameter name rxxxx	<b>Meaning</b> Connector/binector output CO/BO	<b>Symbol</b> Parameter name from ... to [Unit] pxxxx[D] (Def)	<b>Meaning</b> Setting parameter with min/max value and unit [Unit] data set [D] and factory setting (Def)	<b>Symbol</b> pxxxx[M]	<b>Meaning</b> Parameter belongs to the Motor Data Set (MDS).
<b>Information on parameters, binectors, connectors</b>				<b>Cross references between diagrams</b>			
<b>Symbol</b> Parameter name	<b>Meaning</b> Parameter name (up to 18 characters)			<b>Symbol</b> Signal path	<b>Meaning</b> The function diagrams are sub-divided into signal paths 1...8 in order to facilitate orientation.		
[Unit]	[dimension unit]			Text → [aaaa.b]	Text = Unique signal designation aaaa = Signal to target diagram aaa b = Signal to signal path b		
rxxx[y] or rxxx[y..z] or rxxx[y].ww or rxxx.ww	"r" = monitoring parameter. These parameters are read-only "xxxx" 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).			[cccc.d] → Text	Text = Unique signal designation cccc = Signal from source diagram cccc d = Signal from signal path d		
pxxxx[y] or pxxxx[y..z] or pxxxx[y].ww or pxxxx.ww		"p" = setting parameter. These parameters can be changed. "xxxx" 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).			To "function diagram name" [aaaa.b] = binectors.		
from ... to	Value range.				<b>Cross references for control bits</b>		
(xxxx[y].ww)	Parameter number (xxxx) with Index number [y] and bit number .ww.			<b>Symbol</b> pxxxx	<b>Meaning</b> pxxxx = Original parameter of signal aaaa = Signal from source diagram aaaa b = Signal from signal path b		
(Def)	Factory setting.			[aaaa.b]			
(Def.w)	Factory setting with bit number as prefix.						
[aaaa.b]	Diagram references for setting parameters that occur a multiple number of times. [Function diagram number, signal path]						
*) For some parameters the value for the factory setting is calculated during commissioning for they are dependent on Power Module and motor (see Section 2.1.1 "Calculated").							
1	2	3	4	5	6	7	8
Explanations on the function diagrams					fp_1020_97_61.vsd	Function diagram	
Explanation of the symbols (part 1)					07.04.2014 V4.7	G120 CU240B/E-2	
- 1020 -							

Fig. 3-2 1021 – Explanation of the symbols (part 2)

Pre-assigned connectors and binectors	Symbols for logic functions	Symbols for computational and closed-loop control functions					
<p><b>Fixed percentage values</b></p> <p>Fixed value 1 [%] -10000.00 ... 10000.00 [%] p2900 [D] (0.00)</p> <p>or</p> <p>Fixed value 2 [%] -10 000.00...10 000.00 [%] p2901[D] (0.00)</p> <p>Fixed values [%] p2902[0...14] (0.00)</p> <p>p2902[0] = +0 %    p2902[5] = +100 %    p2902[10] = -20 % p2902[1] = +5 %    p2902[6] = +150 %    p2902[11] = -50 % p2902[2] = +10 %    p2902[7] = +200 %    p2902[12] = -100 % p2902[3] = +20 %    p2902[8] = -5 %    p2902[13] = -150 % p2902[4] = +50 %    p2902[9] = -10 %    p2902[14] = -200 %</p> <p><b>Fixed speed values</b></p> <p>n_set_fixed 1 -210000.000 ... 210000.000 [rpm] p1001 [D] (0.000)</p> <p>or</p> <p>n_set_fixed 15 -210 000.000...210 000.000 [1/min] p1015[D] (0.000)</p> <p><b>Fixed torque value</b></p> <p>Fixed value M [Nm] -100000.00 ... 100000.00 [Nm] p2930 [D] (0.00)</p> <p>or</p> <p>Fixed value M [Nm] -100 000.00...100 000.00 [Nm] p2930[D] (0.00)</p>	<p><b>Logical inversion</b></p>  <p><b>AND element</b> with logical inversion of an input signal</p>  <p><b>OR element</b></p>  <p><b>Exclusive-OR/XOR</b> y = 1 when x1 ≠ x2 is.</p>  <p><b>Comparator</b> y = 1 when x1 = x2 is.</p>  <p><b>R/S flip-flop</b> S = setting input R = reset input Q = non-inverted output Q̄ = inverted output</p> 	<p><b>Threshold value switch 1/0</b> Outputs at y a logical "1" if x &lt; S.</p>  <p><b>Threshold value switch 0/1</b> Outputs at y a logical "1" if x &gt; S.</p>  <p><b>Threshold value 1/0 with hysteresis</b> Outputs a logical "1" at y if x &lt; S. If x &gt;= S + H then y returns to 0.</p>  <p><b>Threshold value 0/1 with hysteresis</b> Outputs a logical "1" at y if x &gt; S. If x &lt;= S - H then y returns to 0.</p>  <p><b>Limiter</b> x is limited to the upper limit LU and the lower limit LL and output at y. The digital signals MLU and MLL have the value "1", if the upper or lower limit is active.</p>  <p><b>Sample &amp; Hold element</b> Sample and hold element. y = x if SET = 1 (not retentively saved at POWER OFF)</p> 					
<p><b>Symbol for monitoring</b></p>  <p>Axxxxx or Fxxxxx</p> <p><b>Monitoring</b> In the bottom right-hand corner of the diagram.</p>	<p><b>Symbols for computational and closed-loop control functions</b></p> <p><b>Sign reversal</b> y = -x</p>  <p><b>Absolute value generator</b> y =  x </p>  <p><b>Divider</b> y = x1 / x2</p>  <p><b>Multiplier</b> y = x1 * x2</p>  <p><b>Comparator greater than 0</b> y = 1, if the analog signal x &gt; 0, i.e. is positive.</p>  <p><b>Differentiator</b> y = dx / dt</p> 						
1	2	3	4	5	6	7	8
Explanations on the function diagrams					fp_1021_97_61.vsd	Function diagram	
Explanation of the symbols (part 2)					07.04.2014 V4.7	G120 CU240B/E-2	
							- 1021 -

### 2nd-order filter (bandstop/general filter)

Natural frequency, numerator:  $f_{n\_n}$  pxxxx  
Damping, numerator:  $D\_n$  pxxxx  
Natural frequency, denominator:  $f_{n\_d}$  pxxxx  
Damping, denominator:  $D\_d$  pxxxx

Used as bandstop filter

- center frequency  $f_s$ :  $f_{n\_n} = f_s$ ,  $f_{n\_d} = f_s$
- bandwidth  $f_B$ :  $D\_n = 0$ ,  $D\_d = \frac{f_B}{2 \cdot f_s}$

Transfer function when used as general filter

$$H(s) = \frac{\left(\frac{s}{2\pi f_{n\_n}}\right)^2 + \frac{2 \cdot D\_n}{2\pi f_{n\_n}} \cdot s + 1}{\left(\frac{s}{2\pi f_{n\_d}}\right)^2 + \frac{2 \cdot D\_d}{2\pi f_{n\_d}} \cdot s + 1}$$

### Analog adder can be activated

The following applies to I = 1 signal:  $y = x_1 + x_2$   
The following applies to I = 0 signal:  $y = x_1$

### Switch symbol

#### Simple changeover switch

The switch position is shown according to the factory setting (in this case, switch position 1 is the default state on delivery).

### PT1 element

Delay element, first order.  
pxxxx = time constant

### PT2 low pass

Natural frequency, denominator:  $f_{n\_d}$  pxxxx  
Damping, denominator:  $D\_d$  pxxxx

Transfer function

$$H(s) = \frac{1}{\left(\frac{s}{2\pi f_{n\_d}}\right)^2 + \frac{2 \cdot D\_d}{2\pi f_{n\_d}} \cdot s + 1}$$

### 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)

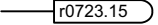
The digital signal x must have the value "1" without interruption during time T1 or must have the value "0" during time T2 before output y changes its signal state.


Fig. 3-3 1022 – Explanation of the symbols (part 3)

1	2	3	4	5	6	7	8
Explanations on the function diagrams					fp_1022_97_61.vsd	Function diagram	
Explanation of the symbols (part 3)					07.04.2014 V4.7	G120 CU240B/E-2	
- 1022 -							

Fig. 3-4 1030 – Handling BICO technology

### Handling BICO technology

**Binector:**  Binectors are binary signals that can be freely interconnected (BO = Binector Output). They represent a bit of a "BO:" display parameter (e.g. bit 15 from r0723).

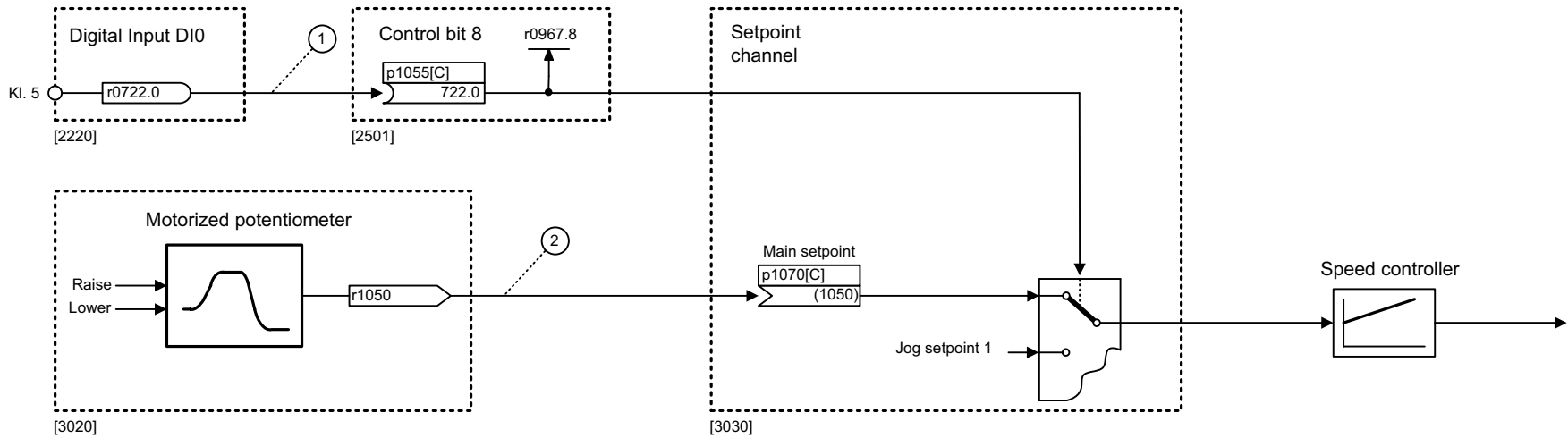
**Connector:**  Connectors are "analog signals" that can be freely interconnected (e.g. percentage variables, speeds or torques). Connectors are also "CO:" display parameters (CO = Connector Output).

**Parameterization:**

At the signal destination, the required binector or connector is selected using appropriate parameters:  
 "BI:" parameter for binectors (BI = Binector Input)  
 or  
 "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.

1	2	3	4	5	6	7	8
Explanations on the function diagrams					fp_1030_97_61.vsd	Function diagram	
Handling BICO technology					07.04.2014 V4.7	G120 CU240B/E-2	
							- 1030 -

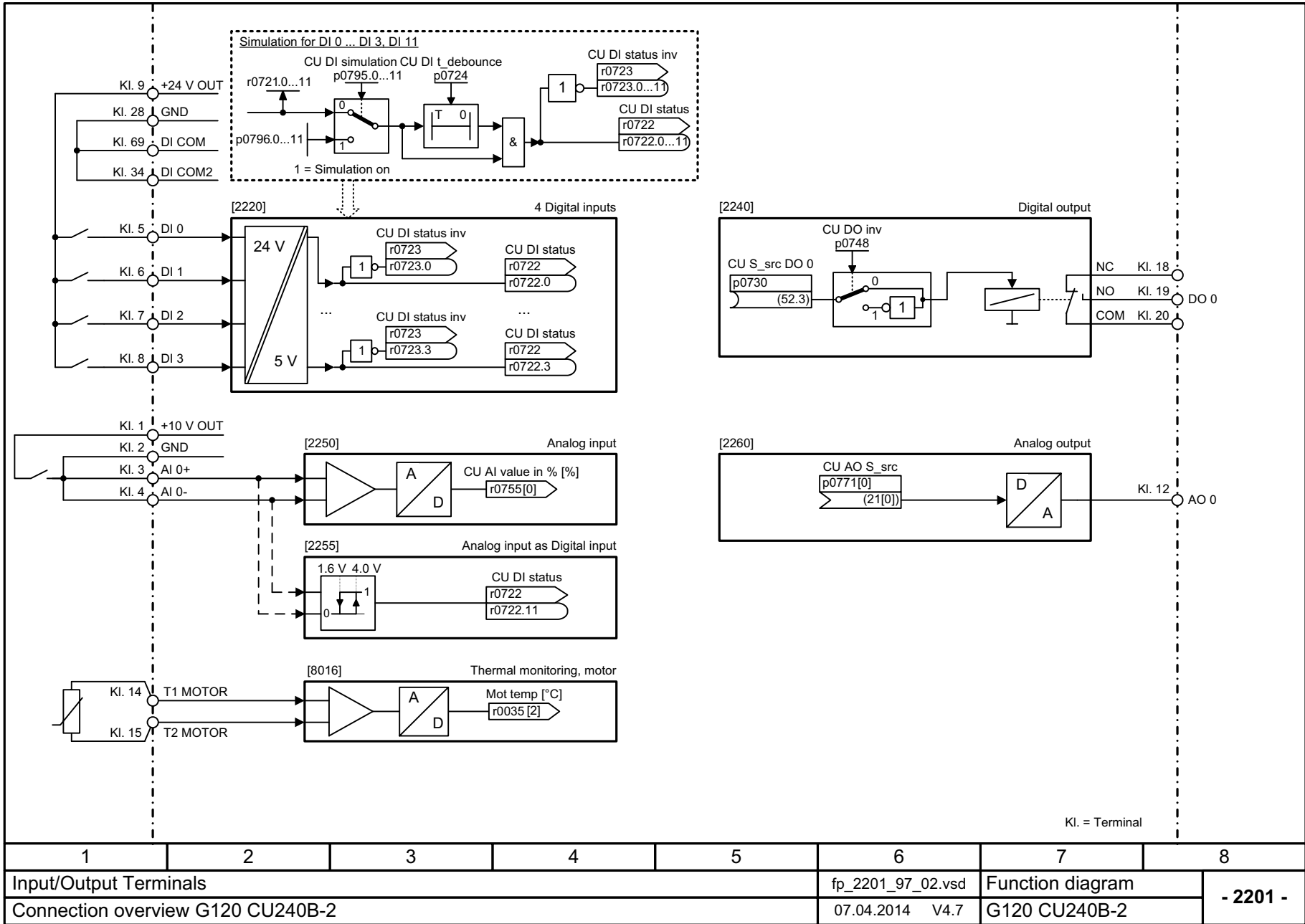
## 3.3 Input/output terminals

### Function diagrams

2201 – Connection overview CU240B-2	521
2202 – Connection overview CU240E-2	522
2220 – CU240B-2: Digital inputs, electrically isolated (DI 0 ... DI 3)	523
2221 – CU240E-2: Digital inputs, electrically isolated (DI 0 ... DI 5)	524
2240 – CU240B-2: Digital output (DO 0)	525
2242 – CU240E-2: Digital outputs (DO 0 ... DO 2)	526
2250 – CU240B-2: Analog input 0 (AI 0)	527
2251 – CU240E-2: Analog inputs 0 ... 1 (AI 0 ... AI 1)	528
2255 – CU240B-2: Analog inputs as digital inputs (DI 11)	529
2256 – CU240E-2: Analog inputs as digital inputs (DI 11 ... DI 12)	530
2260 – CU240B-2: Analog output 0 (AO 0)	531
2261 – CU240E-2: Analog outputs 0 ... 1 (AO 0 ... AO 1)	532
2272 – Two-wire control	533
2273 – Three-wire control	534



Fig. 3-5 2201 – Connection overview CU240B-2



1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2201_97_02.vsd	Function diagram	
Connection overview G120 CU240B-2					07.04.2014 V4.7	G120 CU240B-2	
							- 2201 -

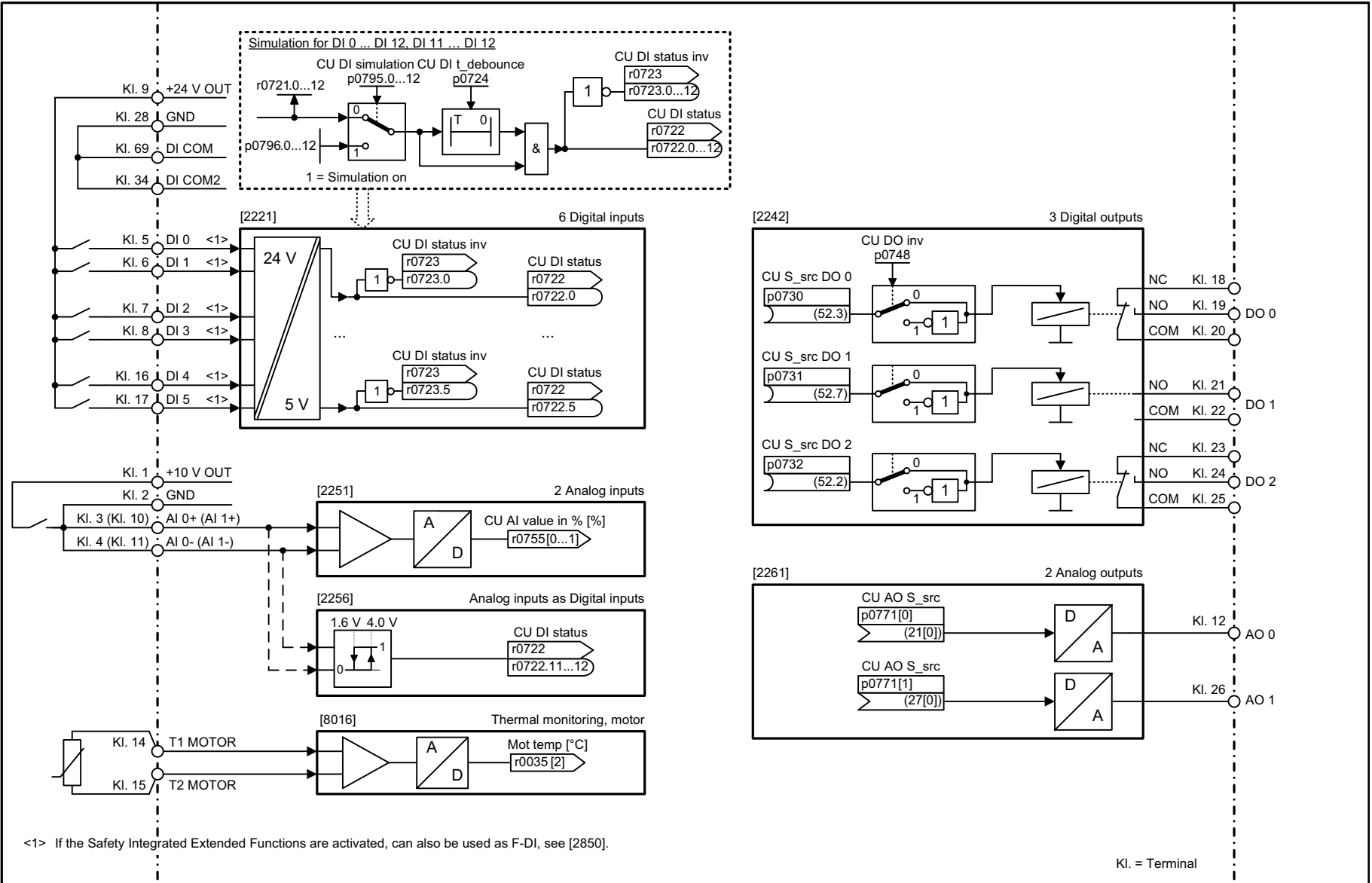
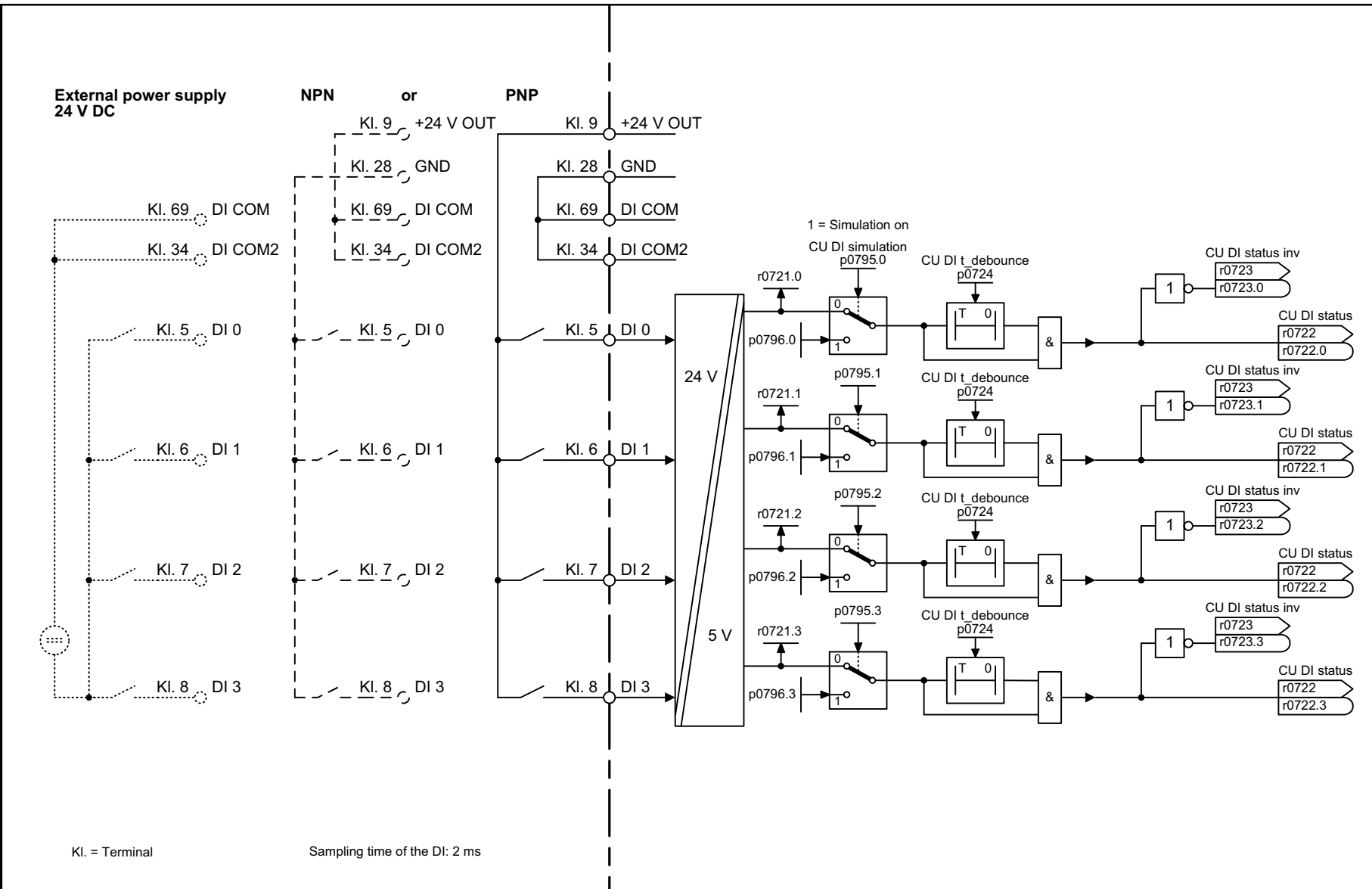


Fig. 3-6 2202 – Connection overview CU240E-2

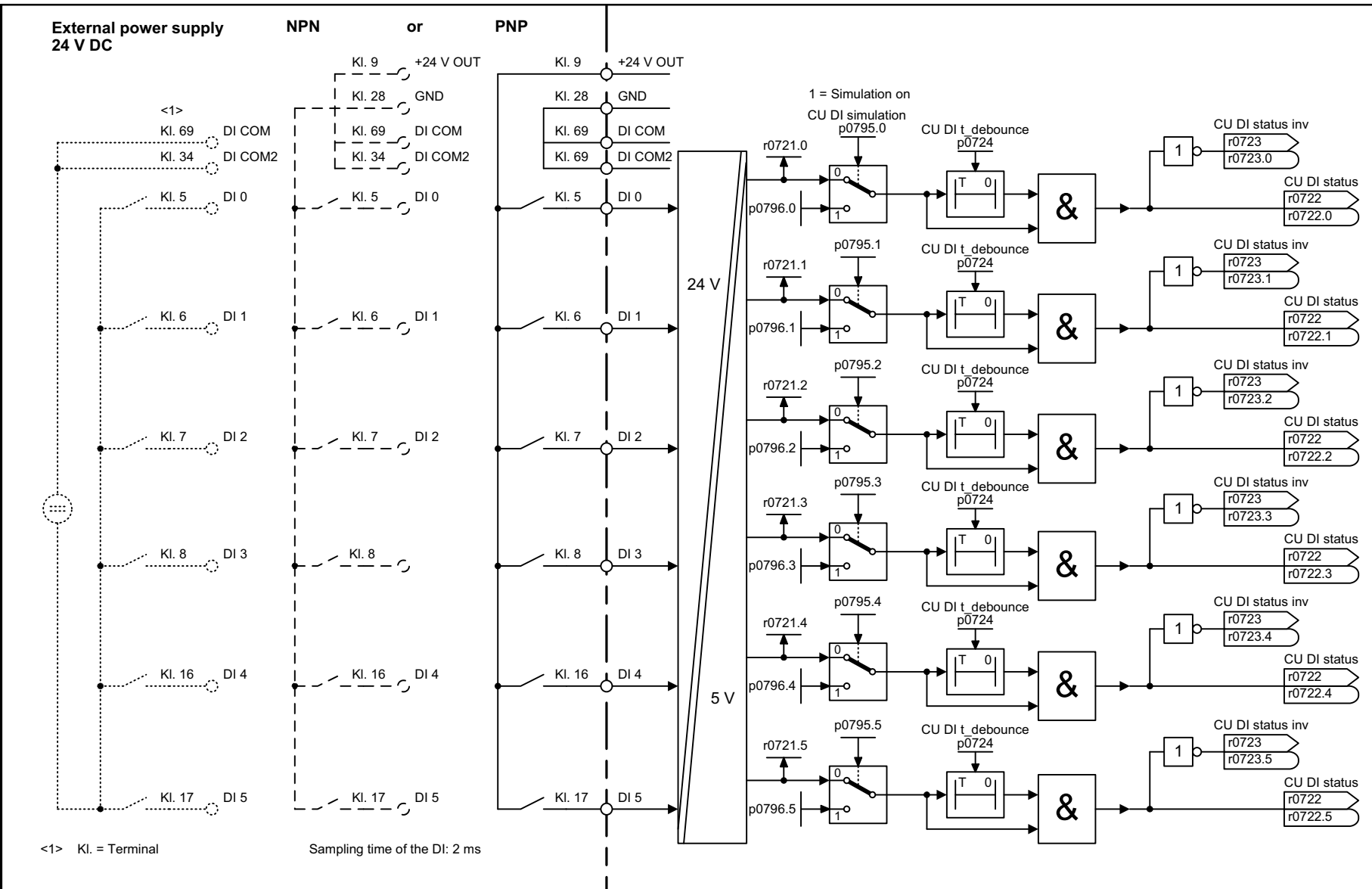
1	2	3	4	5	6	7	8	
Input/Output Terminals					fp_2202_97_02.vsd		Function diagram	- 2202 -
Connection overview G120 CU240E-2					07.04.2014 V4.7		G120 CU240E-2	



1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2220_97_02.vsd	Function diagram	
Digital inputs, electrically isolated (DI 0 ... DI 3)					07.04.2014 V4.7	G120 CU240B-2	

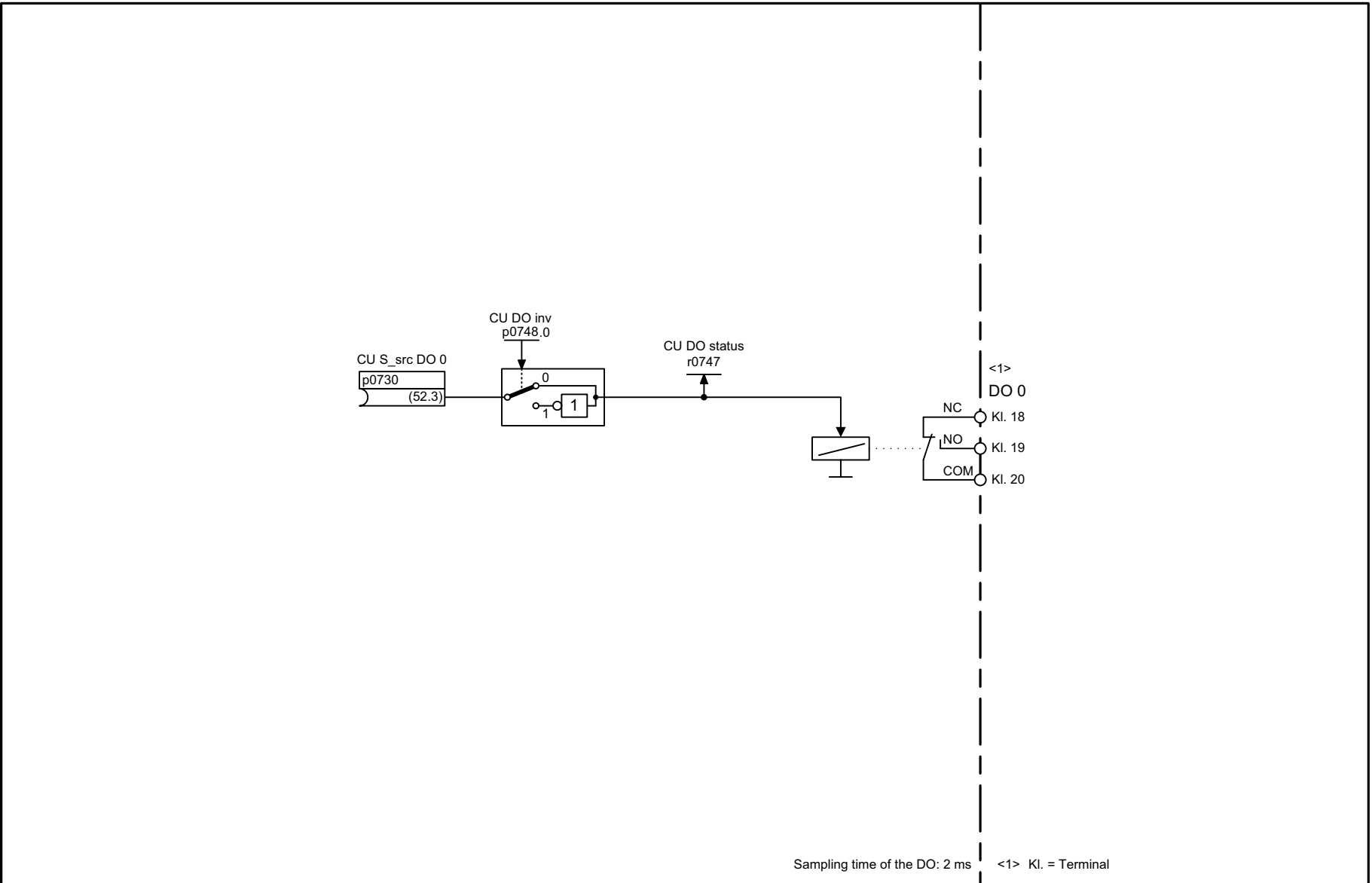
- 2220 -

Fig. 3-7 2220 – CU240B-2: Digital inputs, electrically isolated (DI 0 ... DI 3)



1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2221_97_02.vsd	Function diagram	
Digital inputs, electrically isolated (DI 0 ... DI 5)					07.04.2014 V4.7	G120 CU240E-2	
- 2221 -							

Fig. 3-8 2221 – CU240E-2: Digital inputs, electrically isolated (DI 0 ... DI 5)



1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2240_97_02.vsd	Function diagram	
Digital output (DO 0)					07.04.2014 V4.7	G120 CU240B-2	
- 2240 -							

Fig. 3-9 2240 – CU240B-2: Digital output (DO 0)

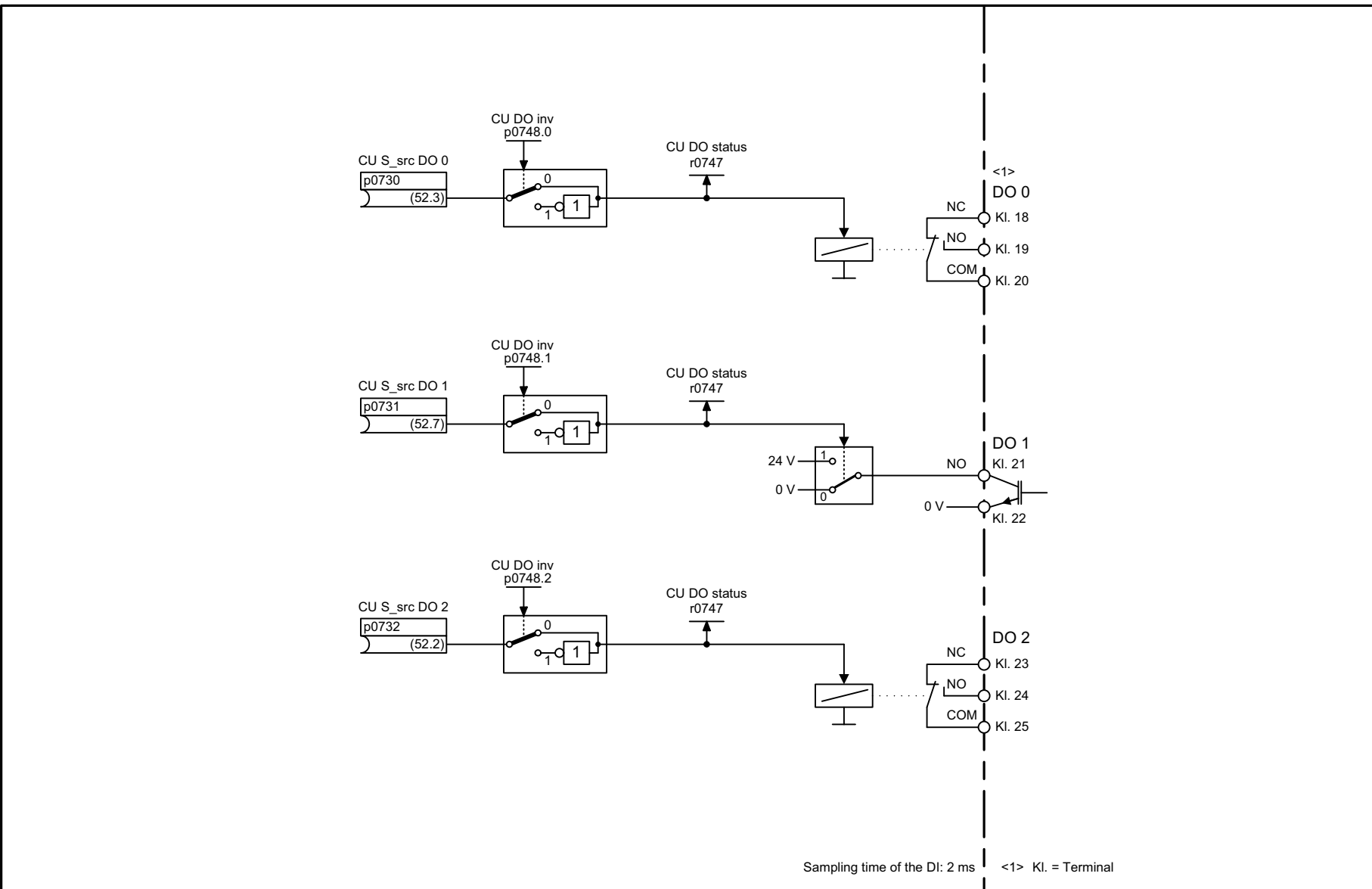
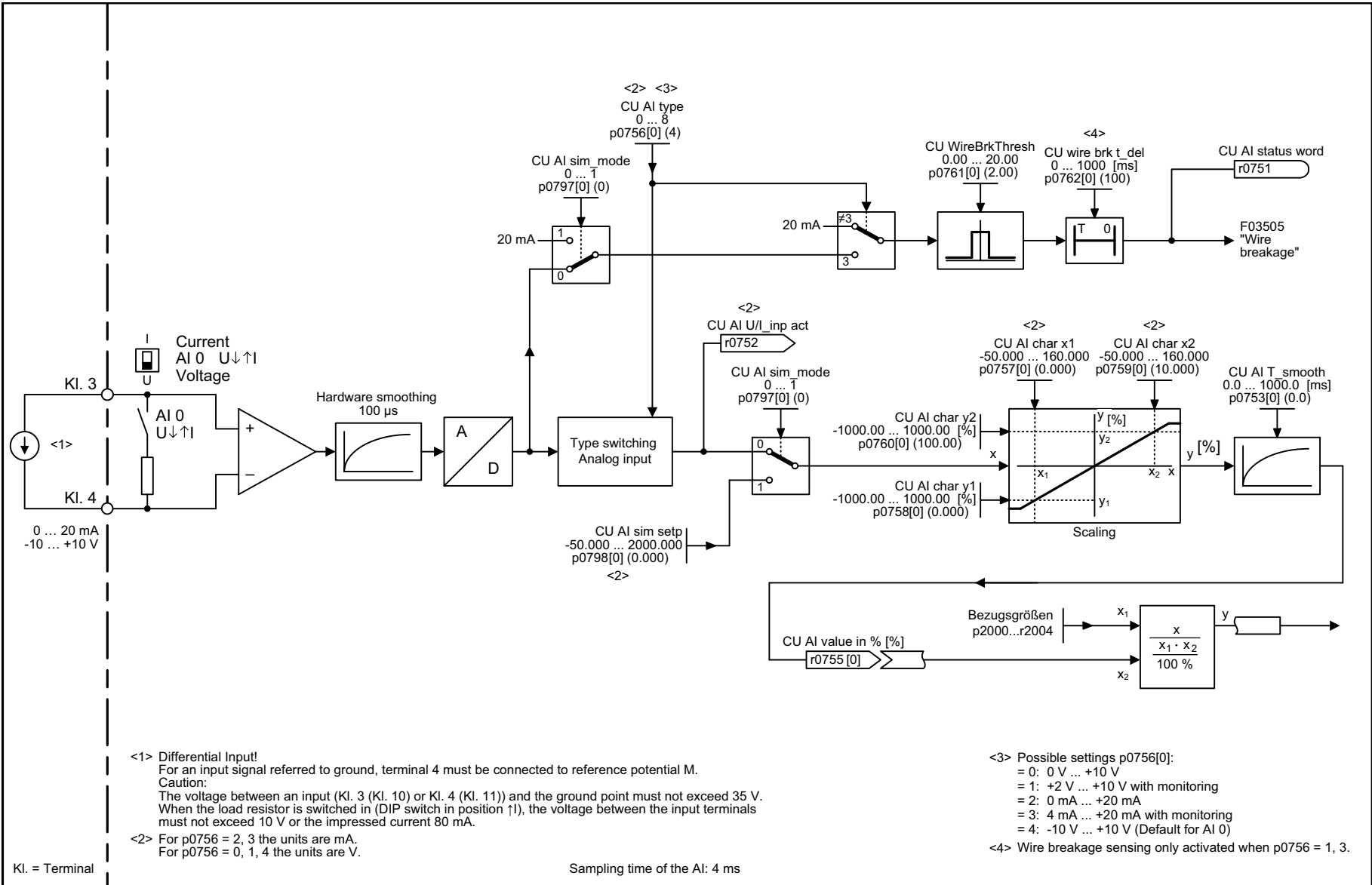


Fig. 3-10 2242 – CU240E-2: Digital outputs (DO 0 ... DO 2)

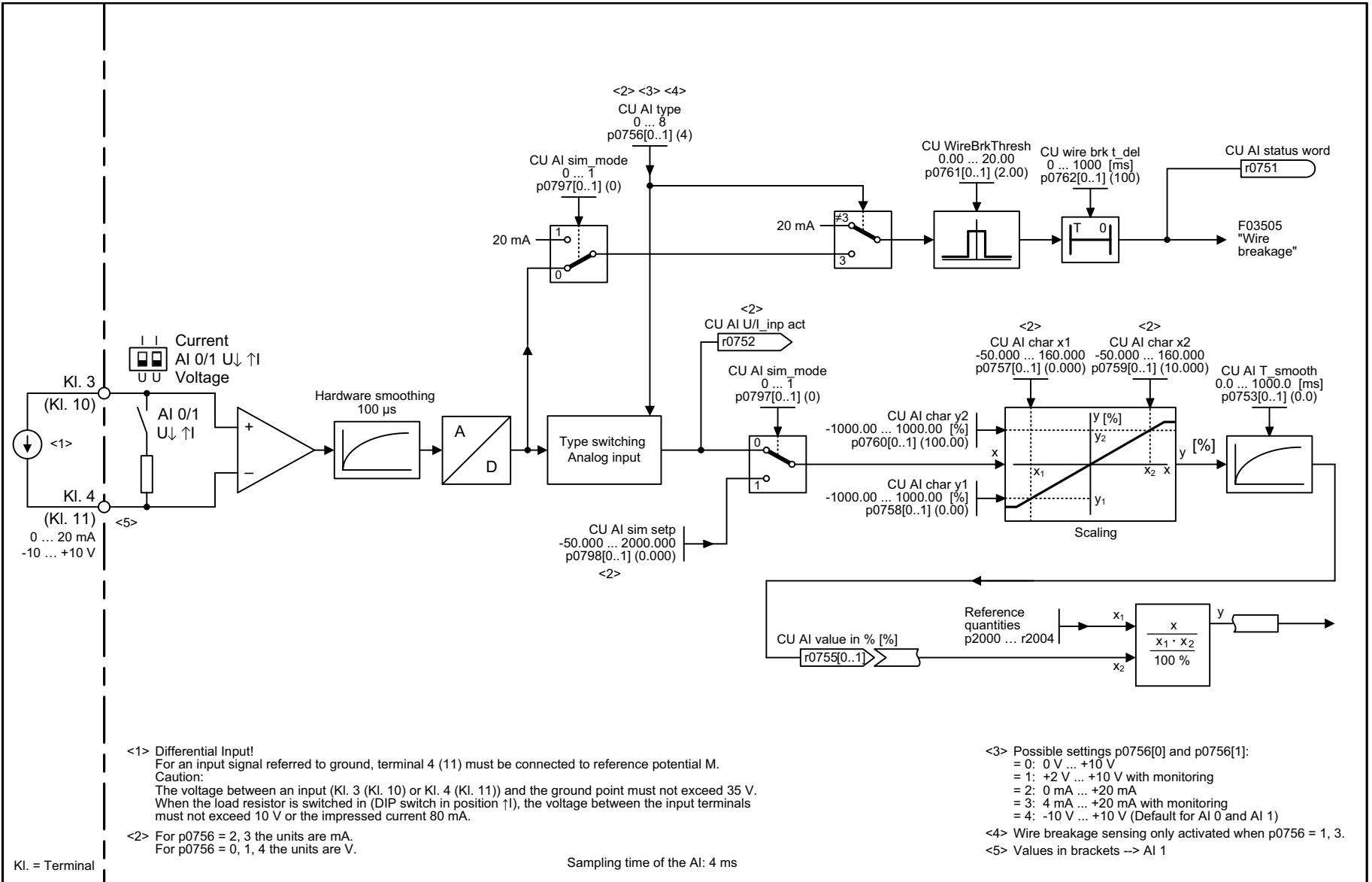
1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2242_97_02.vsd	Function diagram	
Digital outputs (DO 0 ... DO 2)					07.04.2014 V4.7	G120 CU240E-2	
- 2242 -							

Fig. 3-11 2250 – CU240B-2: Analog input 0 (AI 0)



1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2250_97_02.vsd	Function diagram	
Analog input 0 (AI 0)					07.04.2014 V4.7	G120 CU240B-2	

- 2250 -



<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 ↑), 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 AI 0 and AI 1)

<4> Wire breakage sensing only activated when p0756 = 1, 3.

<5> Values in brackets --> AI 1

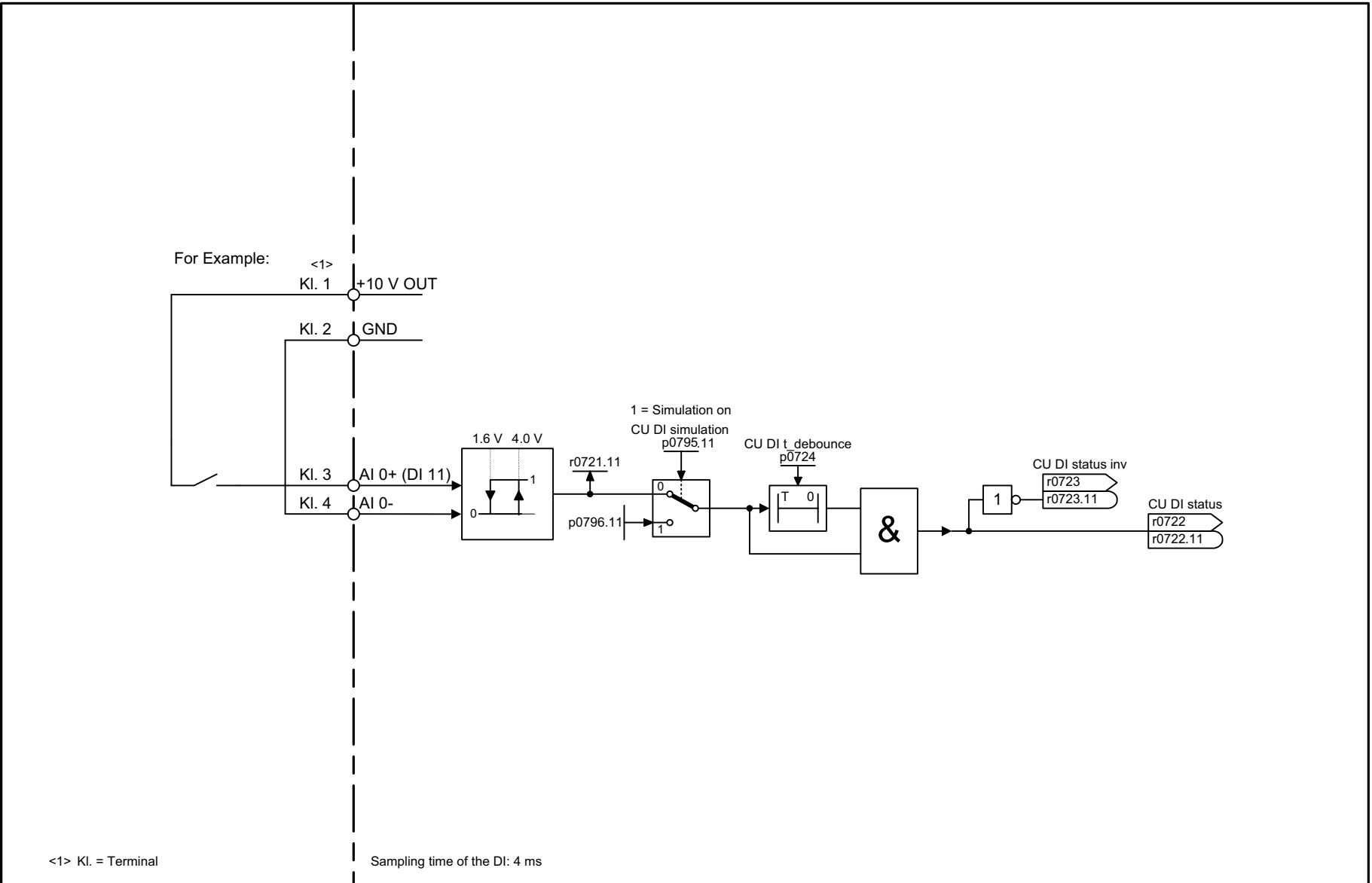
Sampling time of the AI: 4 ms

1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2251_97_52.vsd	Function diagram	
Analog inputs 0 ... 1 (AI 0 ... AI 1)					07.04.2014 V4.7	G120 CU240E-2	

- 2251 -

Fig. 3-12 2251 – CU240E-2: Analog inputs 0 ... 1 (AI 0 ... AI 1)





1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2255_97_02.vsd	Function diagram	
Analog inputs as Digital input (DI 11)					07.04.2014 V4.7	G120 CU240B-2	

Fig. 3-13 2255 – CU240B-2: Analog inputs as digital inputs (DI 11)

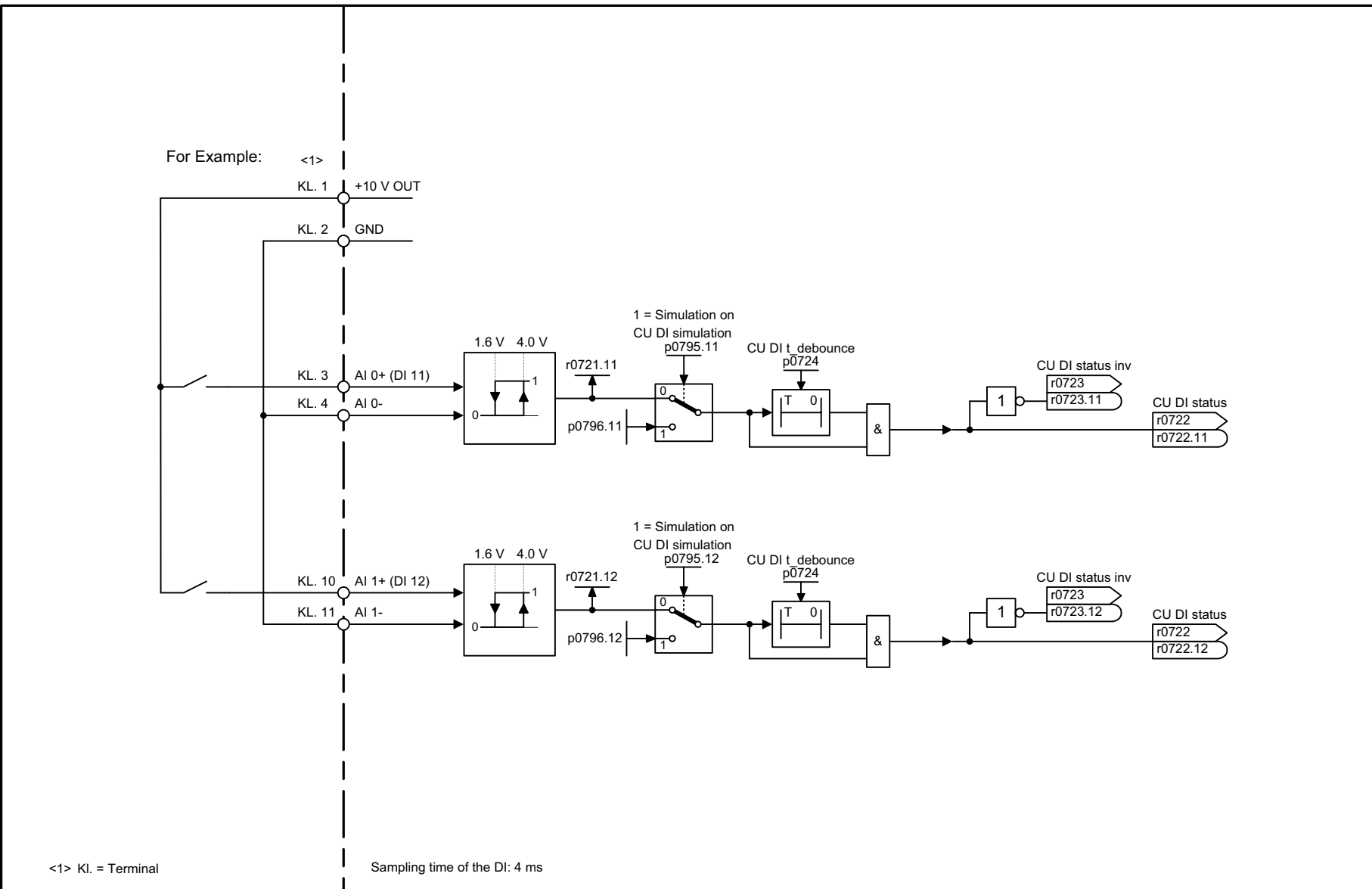
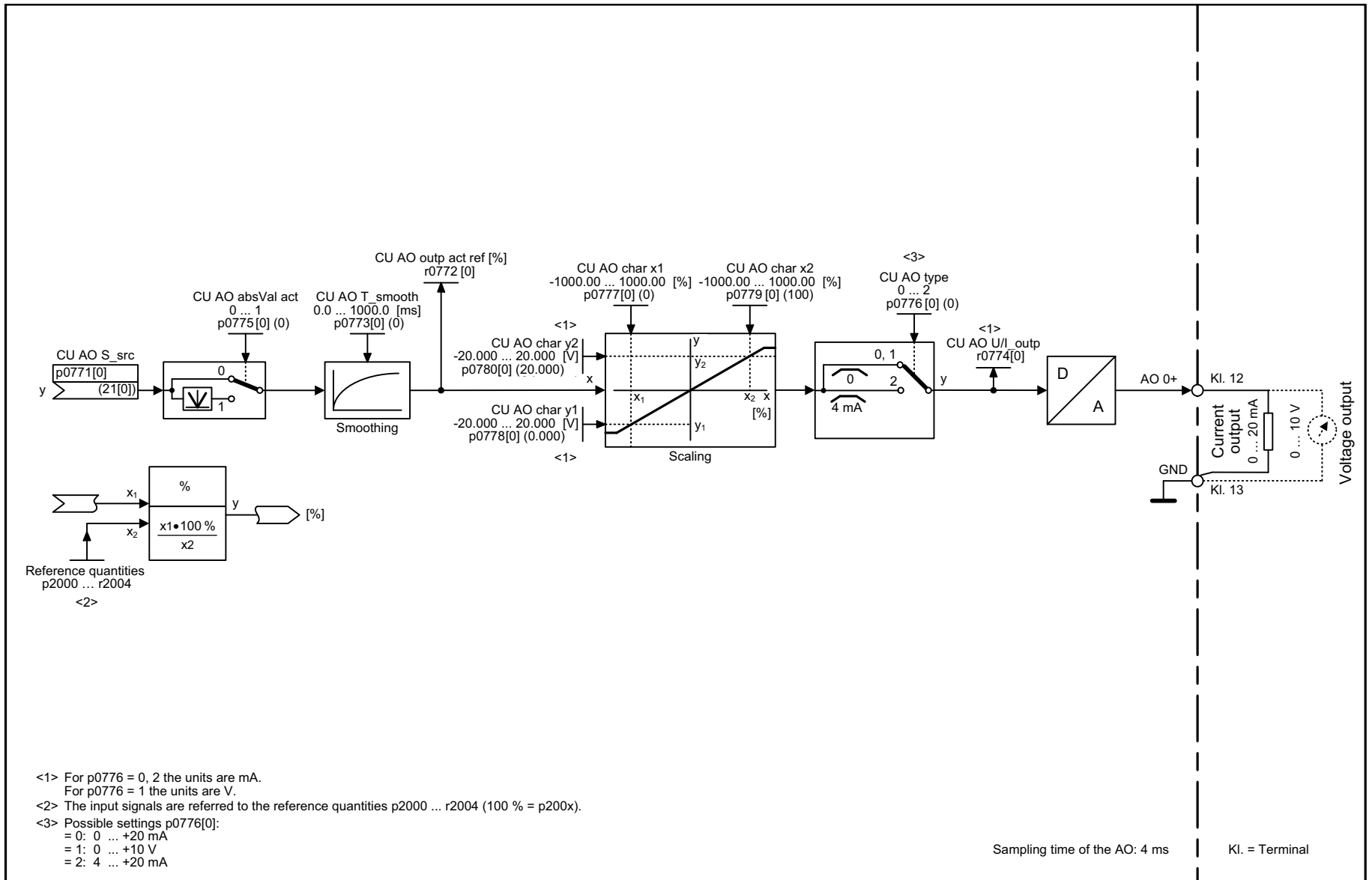


Fig. 3-14 2256 – CU240E-2: Analog inputs as digital inputs (DI 11 ... DI 12)

1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2256_97_02.vsd	Function diagram	
Analog inputs as Digital inputs (DI 11 ... DI 12)					07.04.2014 V4.7	G120 CU240E-2	



<1> For p0776 = 0, 2 the units are mA.  
For p0776 = 1 the units are V.  
<2> The input signals are referred to the reference quantities p2000 ... r2004 (100 % = p200x).  
<3> Possible settings p0776[0]:  
= 0: 0 ... +20 mA  
= 1: 0 ... +10 V  
= 2: 4 ... +20 mA

Sampling time of the AO: 4 ms      KI. = Terminal

1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2260_97_02.vsd	Function diagram	
Analog output 0 (AO 0)					07.04.2014 V4.7	G120 CU240B-2	

Fig. 3-15 2260 – CU240B-2: Analog output 0 (AO 0)

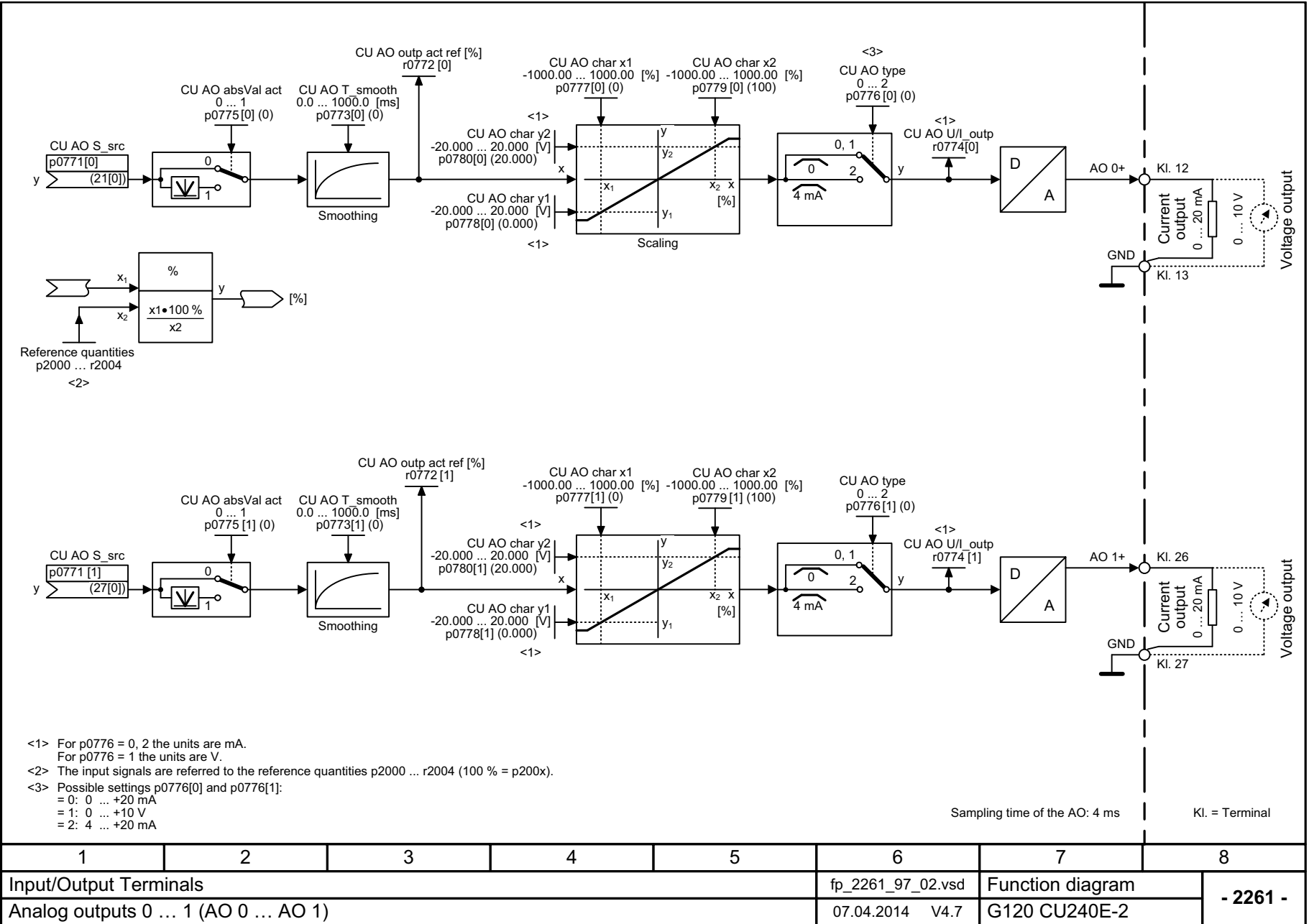
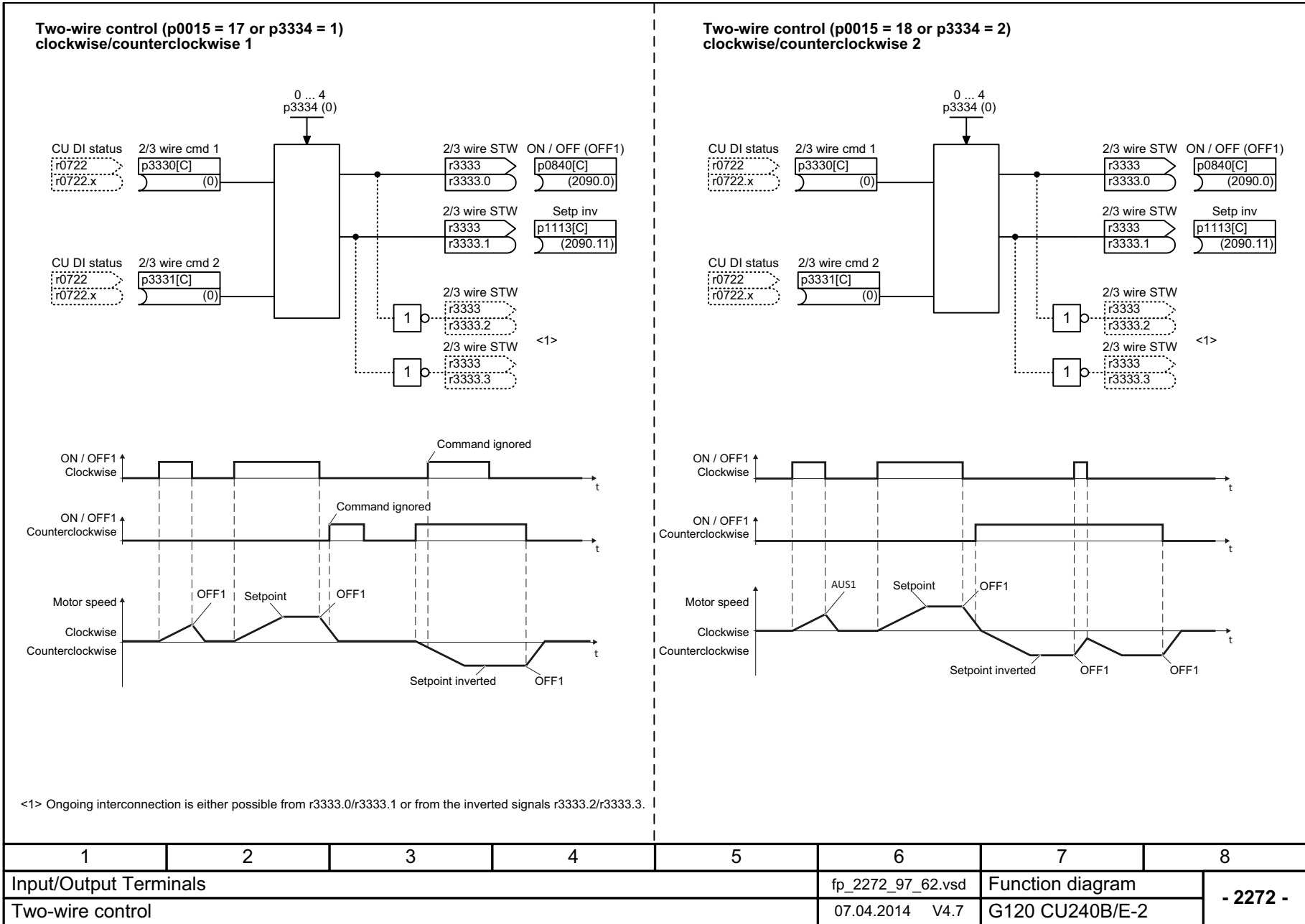


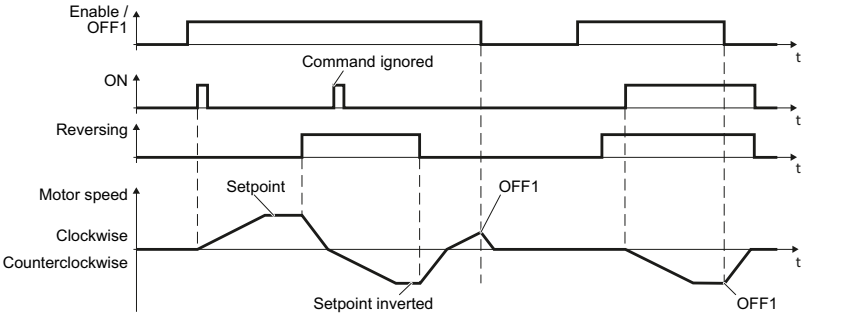
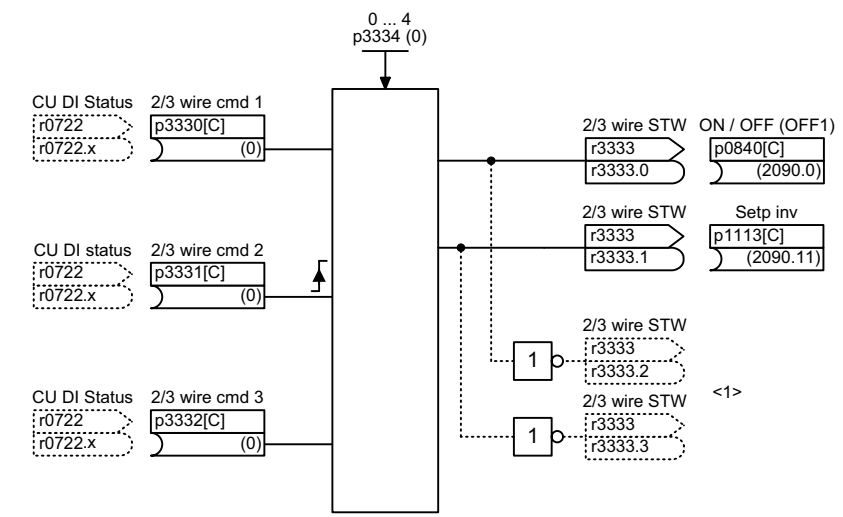
Fig. 3-16 2261 – CU240E-2: Analog outputs 0 ... 1 (AO 0 ... AO 1)

1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2261_97_02.vsd	Function diagram	
Analog outputs 0 ... 1 (AO 0 ... AO 1)					07.04.2014 V4.7	G120 CU240E-2	
<b>- 2261 -</b>							

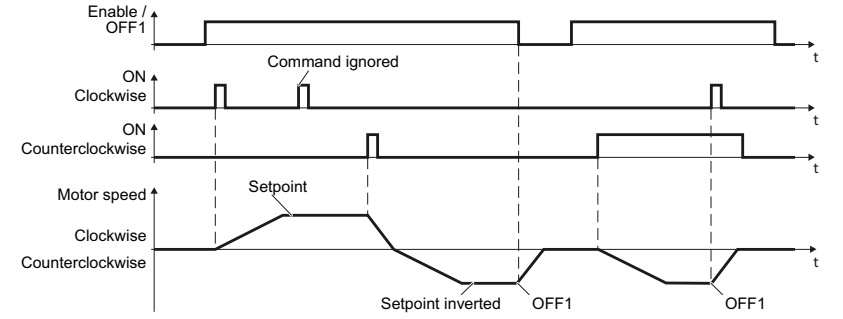
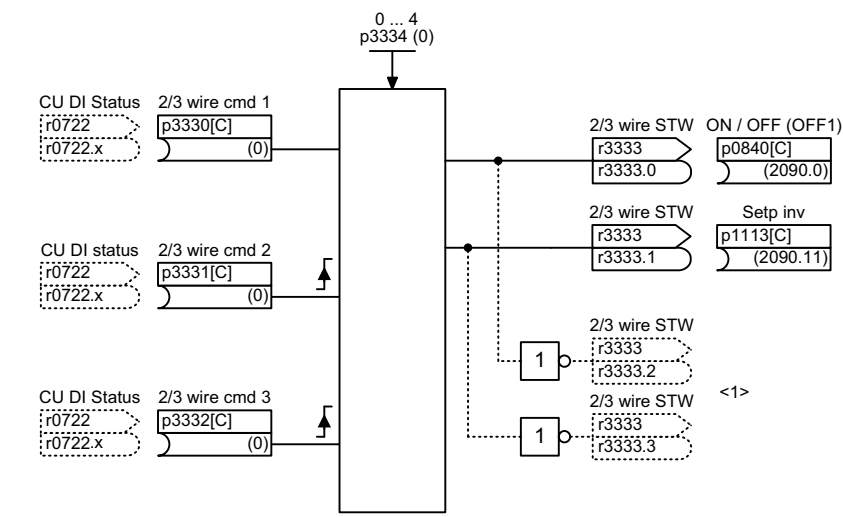
Fig. 3-17 2272 – Two-wire control



Three-wire control (p0015 = 20 or p3334 = 4)  
enable ON/reversing



Three-wire control (p0015 = 19 or p3334 = 3)  
enable clockwise/counterclockwise



<1> Ongoing interconnection is either possible from r3333.0/r3333.1 or from the inverted signals r3333.2/r3333.3.

1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2273_97_62.vsd	Function diagram	
Three-wire control					07.04.2014 V4.7	G120 CU240B/E-2	

Fig. 3-18 2273 – Three-wire control

## 3.4 PROFlenergy

### Function diagrams

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2381 – Control commands and interrogation commands	536
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2382 – States	537
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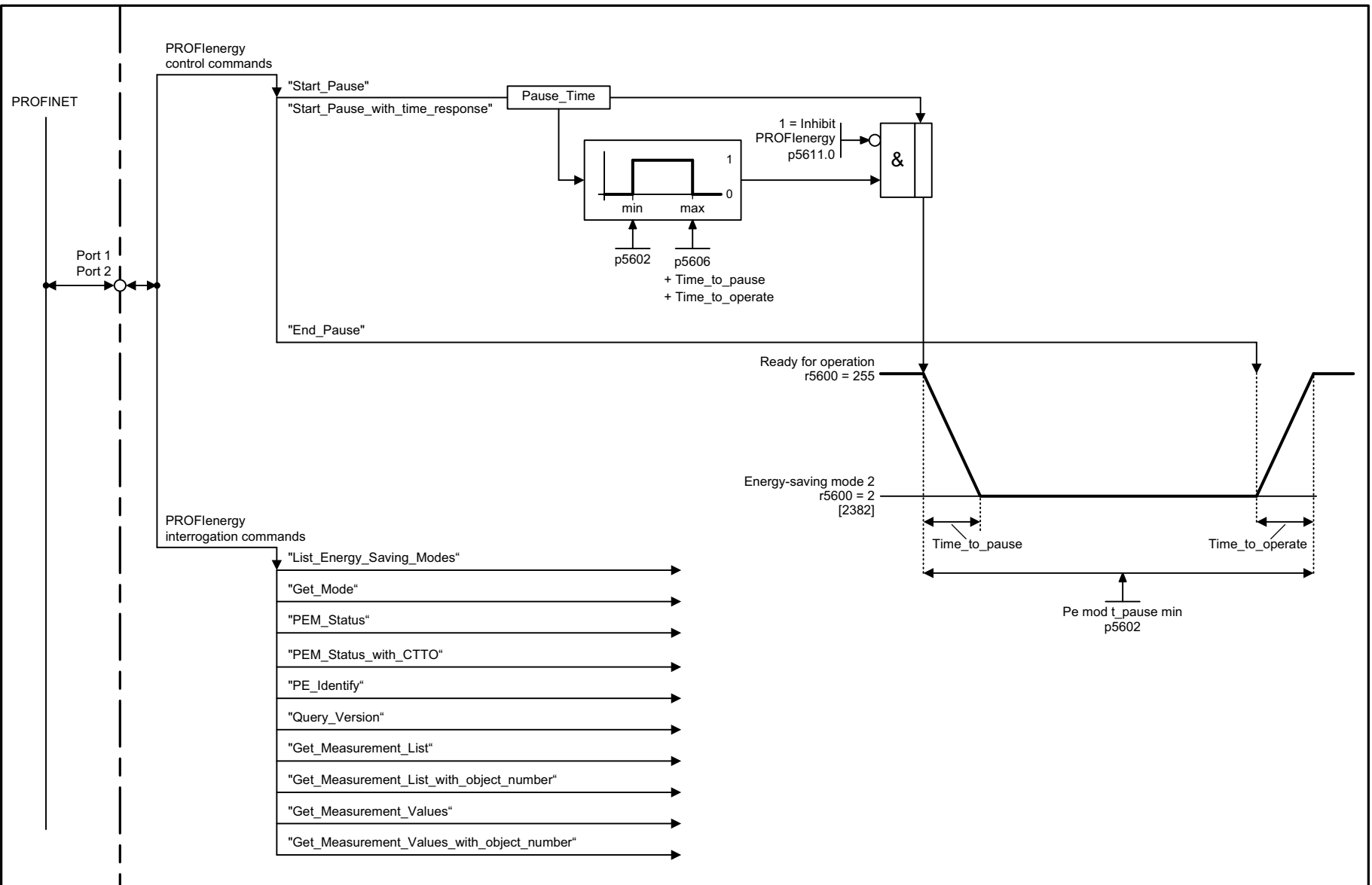
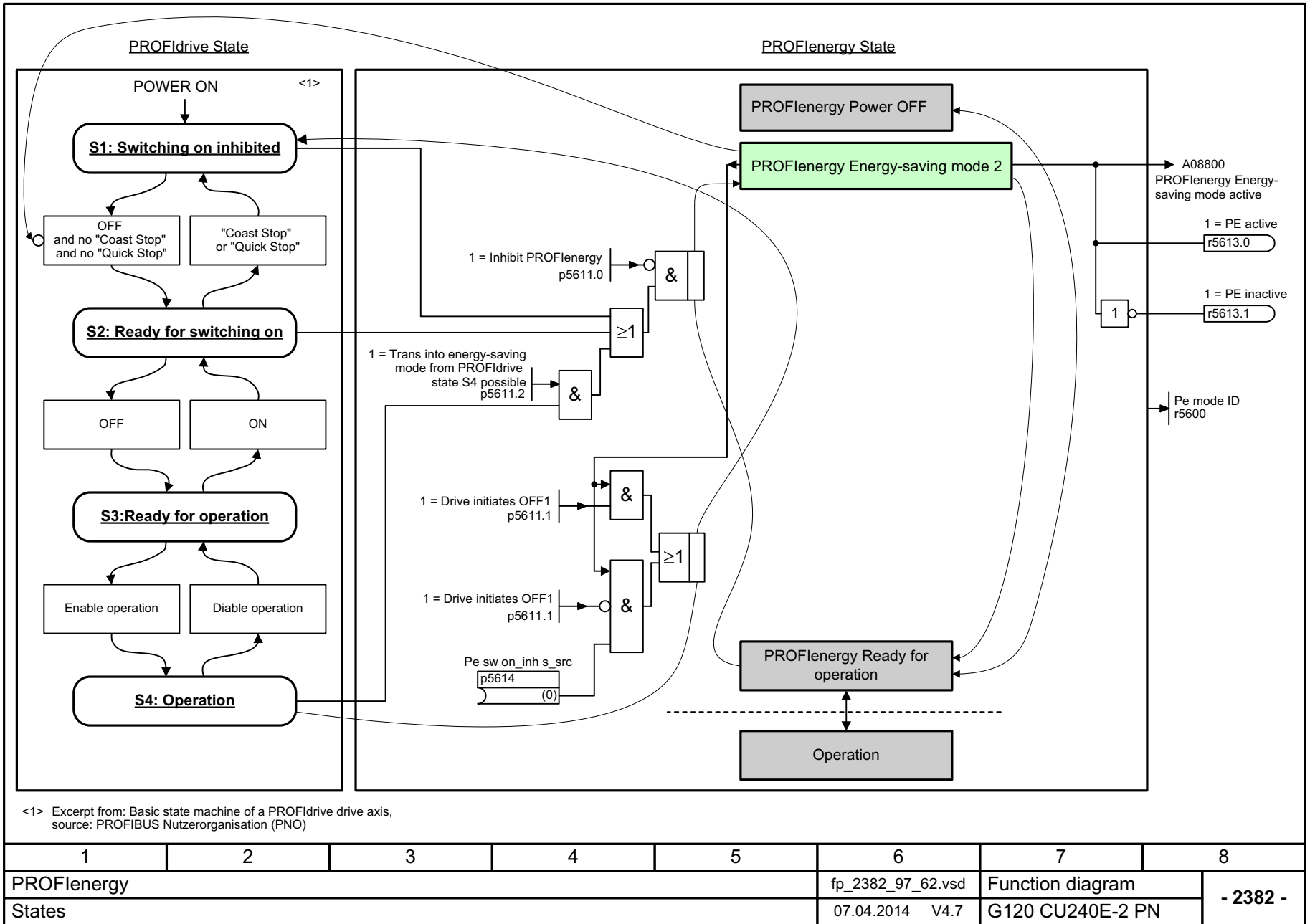


Fig. 3-19 2381 – Control commands and interrogation commands

1	2	3	4	5	6	7	8
PROFlenergy					fp_2381_97_62.vsd	Function diagram	
Control commands and interrogation commands					07.04.2014 V4.7	G120 CU240E-2 PN	
							<b>- 2381 -</b>



Fig. 3-20 2382 – States



## 3.5 PROFIdrive communication (PROFIBUS/PROFINET)

### Function diagrams

2401 – Overview	539
2410 – PROFIBUS (PB) / PROFINET (PN), addresses and diagnostics	540
2420 – Telegrams and process data (PZD)	541
2440 – PZD receive signals interconnection	542
2441 – STW1 control word interconnection (p2038 = 2)	543
2442 – STW1 control word interconnection (p2038 = 0)	544
2446 – STW3 control word interconnection	545
2450 – PZD send signals interconnection	546
2451 – ZSW1 status word interconnection (p2038 = 2)	547
2452 – ZSW1 status word interconnection (p2038 = 0)	548
2456 – ZSW3 status word interconnection	549
2468 – Receive telegram, free interconnection via BICO (p0922 = 999)	550
2470 – Send telegram, free interconnection via BICO (p0922 = 999)	551
2472 – Status words, free interconnection	552

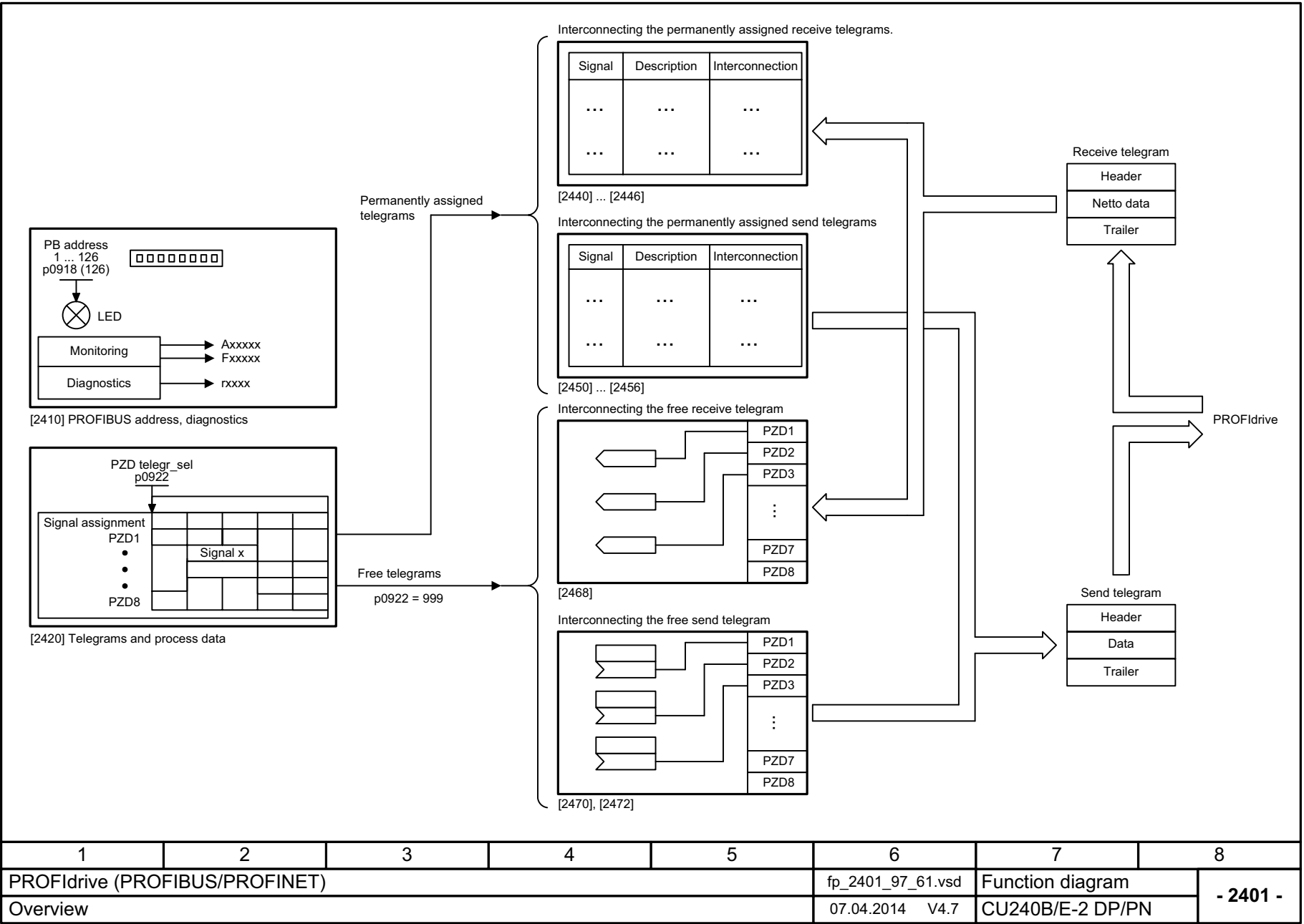


Fig. 3-21 2401 – Overview

1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET)					fp_2401_97_61.vsd	Function diagram	
Overview					07.04.2014 V4.7	CU240B/E-2 DP/PN	
							- 2401 -

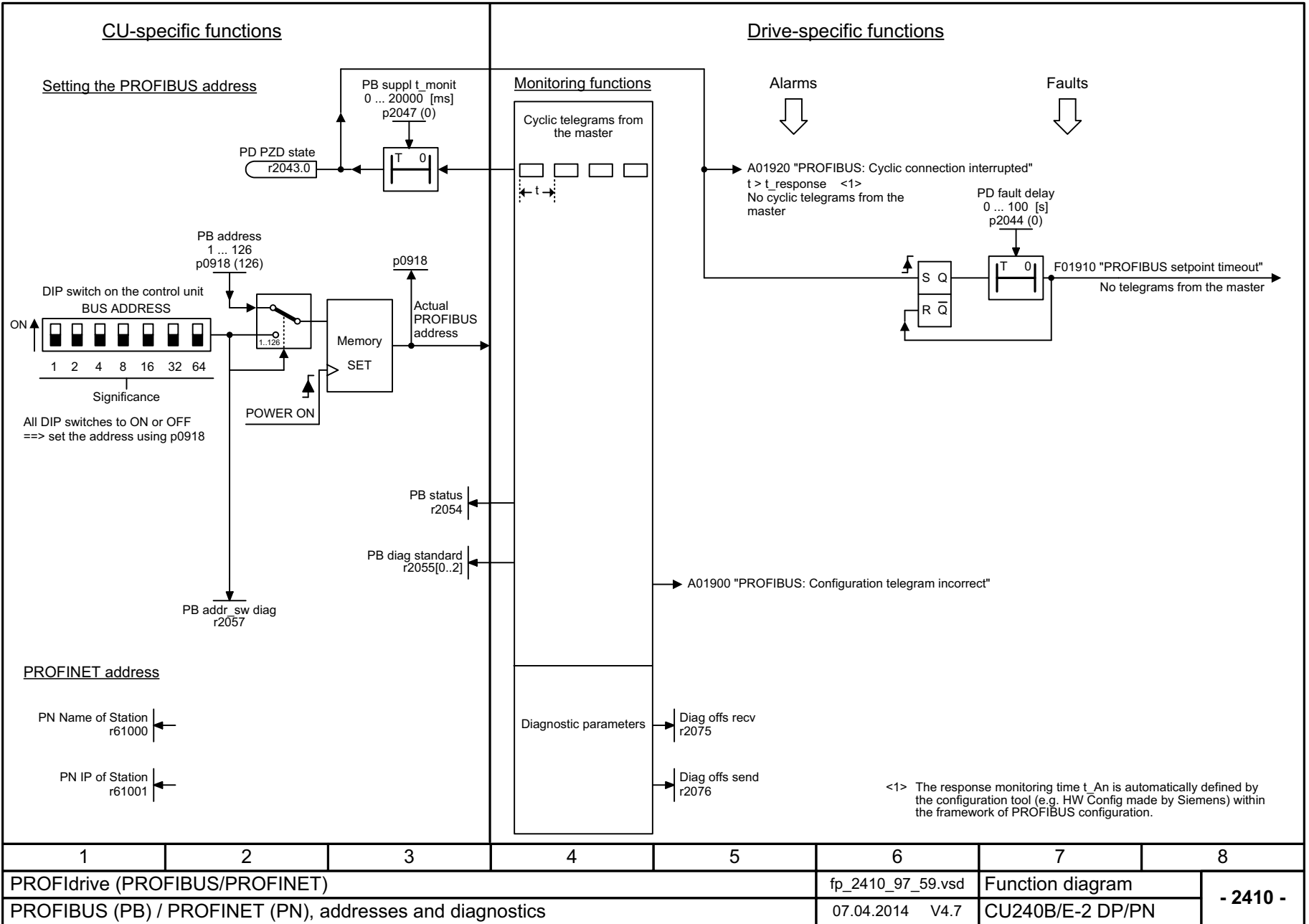


Fig. 3-22 2410 – PROFIBUS (PB) / PROFINET (PN), addresses and diagnostics

1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET)					fp_2410_97_59.vsd	Function diagram	
PROFIBUS (PB) / PROFINET (PN), addresses and diagnostics					07.04.2014 V4.7	CU240B/E-2 DP/PN	
							<b>- 2410 -</b>

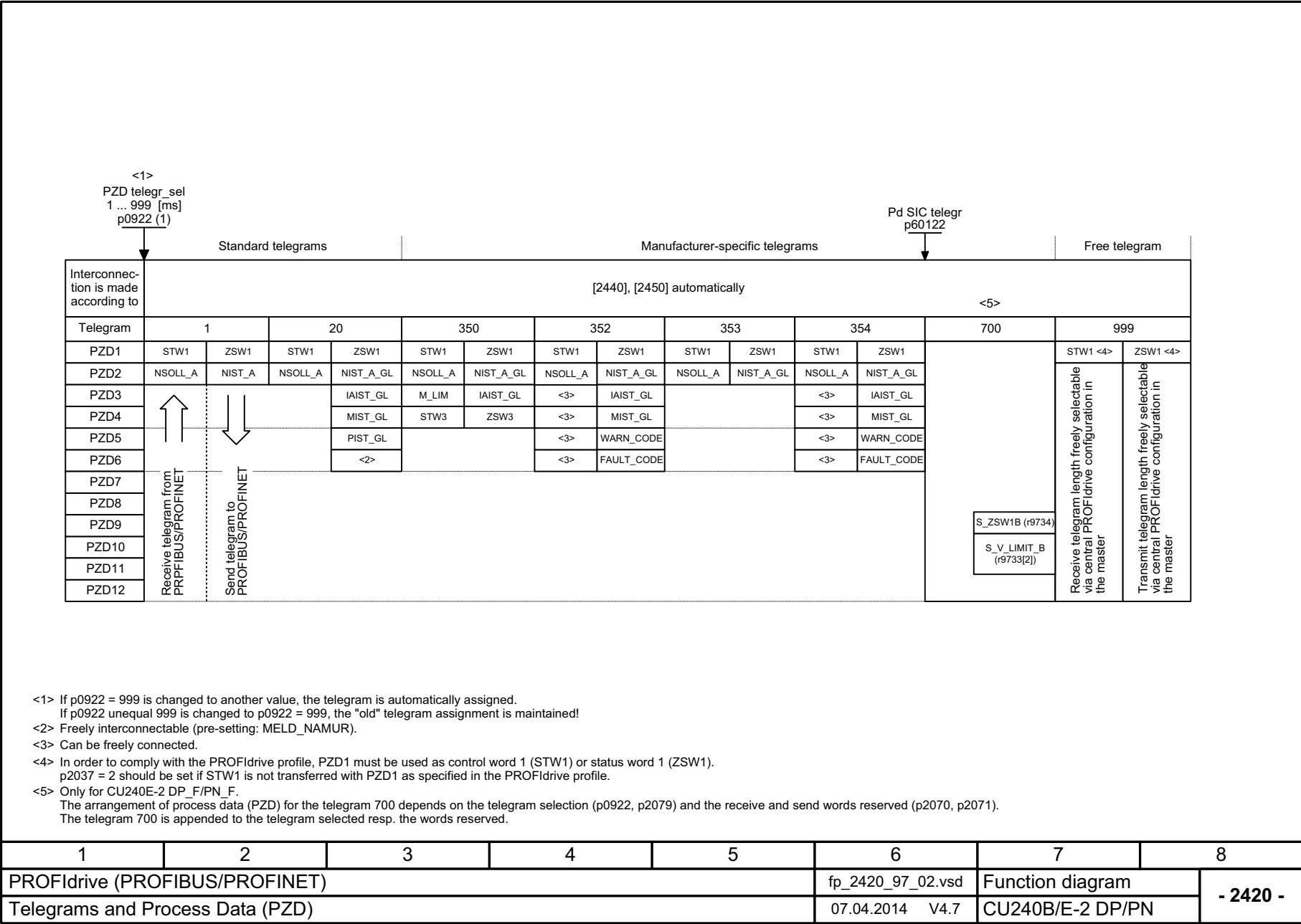


Fig. 3-23 2420 – Telegrams and process data (PZD)

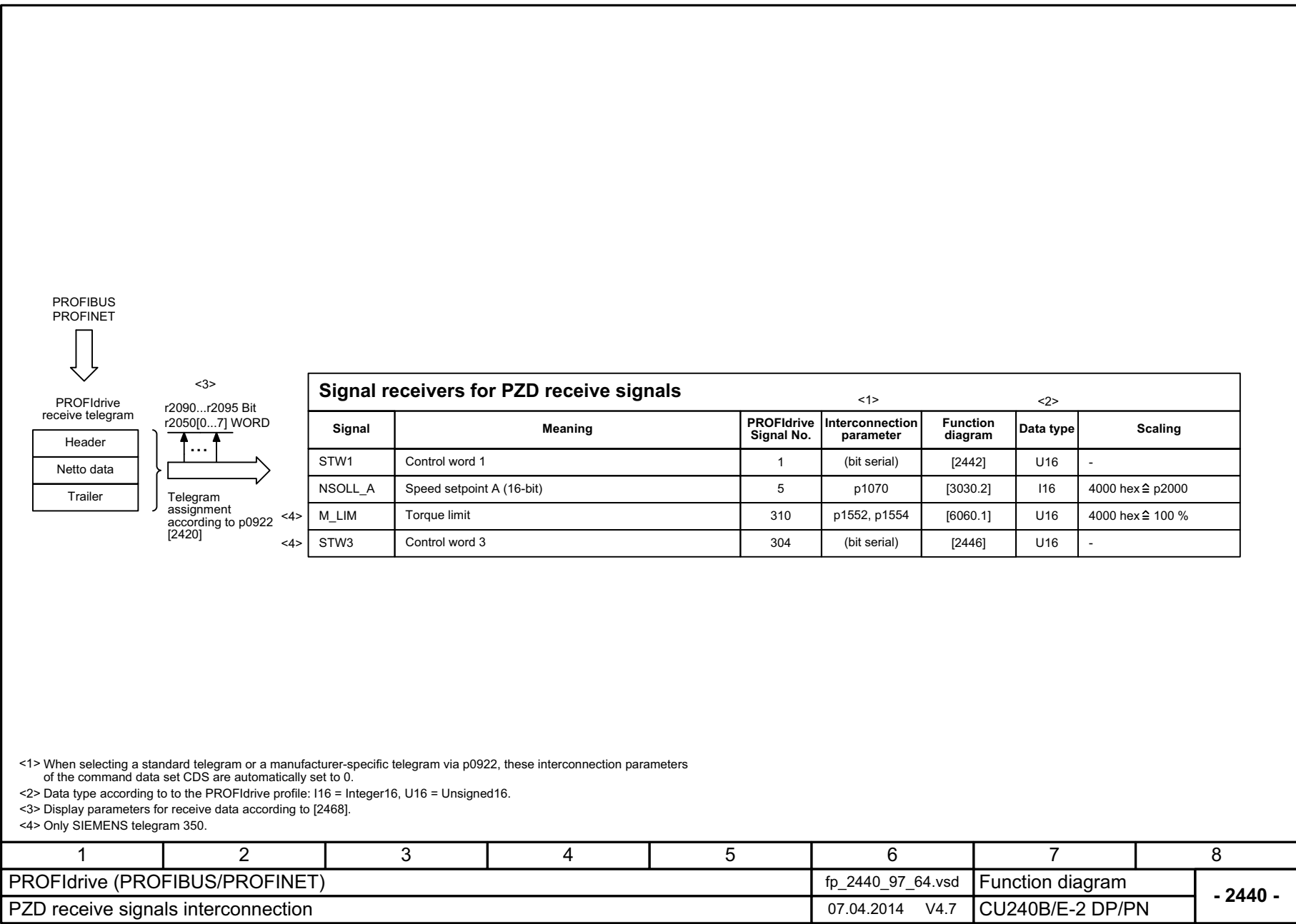


Fig. 3-24 2440 – PZD receive signals interconnection

Signal targets for STW1 in Interface Mode VIK-NAMUR (p2038 = 2) <span style="float: right;">&lt;1&gt;</span>					
Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	▲ = ON (pulses can be enabled) 0 = OFF1 (braking with ramp-function generator, then pulse suppression & ready for switching on)	p0840[0] = r2090.0	[2501.3]	Sequence control	-
STW1.1	1 = No OFF2 (enable is possible) 0 = OFF2 (immediate pulse suppression and switching on inhibited)	p0844[0] = r2090.1	[2501.3]	Sequence control	-
STW1.2	1 = No OFF3 (enable is possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)	p0848[0] = r2090.2	[2501.3]	Sequence control	-
STW1.3	1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (suppress pulses)	p0852[0] = r2090.3	[2501.3]	Sequence control	-
STW1.4	1 = Ramp-function generator enable 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	p1140[0] = r2090.4	[2501.3]	[3060], [3070], [3080]	-
STW1.5	1 = Continue ramp-function generator 0 = Freezes the ramp-function generator	p1141[0] = r2090.5	[2501.3]	[3060], [3070]	-
STW1.6	1 = Setpoint enable 0 = Inhibits the setpoint (the ramp-function generator input is set to zero)	p1142[0] = r2090.6	[2501.3]	[3060], [3070], [3080]	-
STW1.7	▲ = Acknowledge faults	p2103[0] = r2090.7	[2546.1]	[8060]	-
STW1.8	Reserved	-	-	-	-
STW1.9	Reserved	-	-	-	-
STW1.10	1 = Control via PLC <span style="float: right;">&lt;2&gt;</span>	p0854[0] = r2090.10	[2501.3]	[2501]	-
STW1.11	1 = Dir of rot reversal <span style="float: right;">&lt;4&gt;</span>	p1113[0] = r2090.11	[2505.3]	[3040]	-
STW1.12	Reserved	-	-	-	-
STW1.13	Reserved	-	-	-	-
STW1.14	Reserved	-	-	-	-
STW1.15	1 = CDS selection	p0810[0] = 2090.15 <span style="float: right;">&lt;3&gt;</span>	-	[8565]	-

<1> Used in telegram 20. <4> The direction reversal can be locked. See p1110 and p1111.  
 <2> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.  
 <3> Interconnection is not disabled.

1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET)					fp_2441_97_61.vsd	Function diagram	
STW1 control word interconnection (p2038 = 2)					07.04.2014 V4.7	CU240B/E-2 DP/PN	
- 2441 -							

Fig. 3-25 2441 – STW1 control word interconnection (p2038 = 2)

Signal targets for STW1 in Interface Mode SINAMICS (p2038 = 0)					
Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted
STW1.0	$\overline{F}$ = ON (pulses can be enabled) 0 = OFF1 (braking with ramp-function generator, then pulse suppression & ready for switching on)	p0840[0] = r2090.0	[2501.3]	Sequence control	-
STW1.1	1 = No OFF2 (enable is possible) 0 = OFF2 (immediate pulse suppression and switching on inhibited)	p0844[0] = r2090.1	[2501.3]	Sequence control	-
STW1.2	1 = No OFF3 (enable is possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)	p0848[0] = r2090.2	[2501.3]	Sequence control	-
STW1.3	1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (suppress pulses)	p0852[0] = r2090.3	[2501.3]	Sequence control	-
STW1.4	1 = Ramp-function generator enable 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	p1140[0] = r2090.4	[2501.3]	[3060], [3070], [3080]	-
STW1.5	1 = Continue ramp-function generator 0 = Freezes the ramp-function generator	p1141[0] = r2090.5	[2501.3]	[3060], [3070]	-
STW1.6	1 = Setpoint enable 0 = Inhibits the setpoint (the ramp-function generator input is set to zero)	p1142[0] = r2090.6	[2501.3]	[3060], [3070], [3080]	-
STW1.7	$\overline{F}$ = Acknowledge faults	p2103[0] = r2090.7	[2546.1]	[8060]	-
STW1.8	Reserved	-	-	-	-
STW1.9	Reserved	-	-	-	-
STW1.10	1 = Control via PLC <1>	p0854[0] = r2090.10	[2501.3]	[2501]	-
STW1.11	1 = Dir of rot reversal <2>	p1113[0] = r2090.11	[2505.3]	[3040]	-
STW1.12	Reserved	-	-	-	-
STW1.13	1 = Motorized potentiometer, setpoint, raise	p1035[0] = r2090.13	[2505.3]	[3020]	-
STW1.14	1 = Motorized potentiometer, setpoint, lower	p1036[0] = r2090.14	[2505.3]	[3020]	-
STW1.15	Reserved	-	-	-	-

<1> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.  
 <2> The direction reversal can be locked. See p1110 and p1111.

1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET)					fp_2442_97_61.vsd	Function diagram	
STW1 control word interconnection (p2038 = 0)					07.04.2014 V4.7	CU240B/E-2 DP/PN	
- 2442 -							

Fig. 3-26 2442 – STW1 control word interconnection (p2038 = 0)

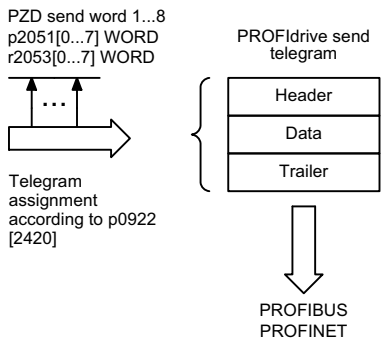


Signal targets for STW3 in Interface Mode SINAMICS						<1>
Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted	
STW3.0	1 = Fixed setp bit 0	p1020[0] = r2093.0	[3010.2]	[3010.2]	-	
STW3.1	1 = Fixed setp bit 1	p1021[0] = r2093.1	[2513.2]	[3010.2]	-	
STW3.2	1 = Fixed setp bit 2	p1022[0] = r2093.2	[2513.2]	[3010.2]	-	
STW3.3	1 = Fixed setp bit 3	p1023[0] = r2093.3	[2513.2]	[3010.2]	-	
STW3.4	1 = DDS select. bit 0	p0820 = r2093.4	[2513.2]	[8565.2]	-	
STW3.5	1 = DDS select. bit 1	p0821 = r2093.5	[2513.2]	[8565.2]	-	
STW3.6	Reserved	-	-	-	-	
STW3.7	Reserved	-	-	-	-	
STW3.8	1 = Technology controller enable	p2200[0] = r2093.8	[2513.2]	[7958.4]	-	
STW3.9	1 = DC braking active	p1230[0] = r2093.9	[2513.2]	[7017.1]	-	
STW3.10	Reserved	-	-	-	-	
STW3.11	1 = Droop enable	p1492[0] = r2093.11	[2513.2]	[6030.1]	-	
STW3.12	1 = Torque control	p1501[0] = r2093.12	[2513.2]	[6060.1]	-	
STW3.13	0 = External fault 1 (F07860)	p2106[0] = r2093.13	[2513.2]	[8060.1]	-	
STW3.14	Reserved	-	-	-	-	
STW3.15	1 = CDS bit 1	p0811[0] = r2093.15	[2513.2]	[8560.3]	-	

<1> Used in telegram 350.

1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET)					fp_2446_97_51.vsd	Function diagram	
STW3 control word interconnection					07.04.2014 V4.7	CU240B/E-2 DP/PN	
							- 2446 -

Fig. 3-27 2446 – STW3 control word interconnection



Signal sources for PZD send signals <1>						
Signal	Description	PROFIdrive Signal No.	Interconnection parameter	Function diagram	Data type	Scaling
ZSW1	Status word 1	2	r2089[0]	[2452]	U16	-
NIST_A	Actual speed A (16 bit)	6	r0063[0]	-	I16	4000 hex $\hat{=}$ p2000
IAIST_GLATT	Absolute actual current, smoothed	51	r0068[1]	[6799]	I16	4000 hex $\hat{=}$ p2002
MIST_GLATT	Actual torque smoothed	53	r0080[1]	[6799]	I16	4000 hex $\hat{=}$ p2003
PIST_GLATT	Power factor, smoothed	54	r0082[1]	[6799]	I16	4000 hex $\hat{=}$ p2004
NIST_A_GLATT	Actual speed, smoothed	57	r0063[1]	-	I16	4000 hex $\hat{=}$ p2000
MELD_NAMUR	VIK-NAMUR message bit bar	58	r3113	-	U16	
FAULT_CODE	Fault code	301	r2131	[8060]	U16	
WARN_CODE	Alarm code	303	r2132	[8065]	U16	
ZSW3	Status word 3	305	r0053	[2456]	U16	

<1> Data type according to the PROFIdrive profile: I16 = Integer16, U16 = Unsigned16.

1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET)					fp_2450_97_64.vsd	Function diagram	
PZD send signals interconnection					07.04.2014 V4.7	CU240B/E-2 DP/PN	
							<b>- 2450 -</b>

Fig. 3-28 2450 – PZD send signals interconnection

Signal sources for ZSW1 in Interface Mode VIK-NAMUR (p2038 = 2)					
Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted <1>
ZSW1.0	1 = Ready for switching on	p2080[0] = r0899.0	[2503.7]	Sequence control	-
ZSW1.1	1 = Ready for operation (DC link loaded, pulses inhibited)	p2080[1] = r0899.1	[2503.7]	Sequence control	-
ZSW1.2	1 = Operation enabled (drive follows n_set)	p2080[2] = r0899.2	[2503.7]	Sequence control	-
ZSW1.3	1 = Fault present	p2080[3] = r2139.3	[2548.7]	[8060]	-
ZSW1.4	1 = No coast down active (OFF2 inactive)	p2080[4] = r0899.4	[2503.7]	Sequence control	-
ZSW1.5	1 = No quick stop active (OFF3 inactive)	p2080[5] = r0899.5	[2503.7]	Sequence control	-
ZSW1.6	1 = Switching on inhibited active	p2080[6] = r0899.6	[2503.7]	Sequence control	-
ZSW1.7	1 = Alarm present	p2080[7] = r2139.7	[2548.7]	[8065]	-
ZSW1.8	1 = Speed setpoint - actual value deviation within tolerance t_off	p2080[8] = r2197.7	[2534.7]	[8011]	-
ZSW1.9	1 = Control requested	p2080[9] = r0899.9	[2503.7]	[2503]	-
ZSW1.10	1 = f or n comparison value reached/exceeded	p2080[10] = r2199.1	[2537.7]	[8010]	-
ZSW1.11	1 = I, M, or P limit not reached	p2080[11] = r0056.13	[2522.7]	[6060]	✓
ZSW1.12	Reserved	-	-	-	-
ZSW1.13	1 = No motor overtemperature alarm	p2080[13] = r2135.14	[2548.7]	[8016]	✓
ZSW1.14	1 = Motor rotates forwards (n_act ≥ 0) 0 = Motor rotates backwards (n_act < 0)	p2080[14] = r2197.3	[2534.7]	[8011]	-
ZSW1.15	1 = Display CDS	p2080[15] = r0836.0 <2>	-	-	-

<1> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0]..p2088[0].15)  
 <2> Interconnection is not disabled.

1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET)					fp_2451_97_61.vsd	Function diagram	
ZSW1 status word interconnection (p2038 = 2)					07.04.2014 V4.7	CU240B/E-2 DP/PN	
							- 2451 -

Fig. 3-29 2451 – ZSW1 status word interconnection (p2038 = 2)

Signal sources for ZSW1 im Interface Mode SINAMICS (p2038 = 0)					
Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted <1>
ZSW1.0	1 = Ready for switching on	p2080[0] = r0899.0	[2503.7]	Sequence control	-
ZSW1.1	1 = Ready for operation (DC link loaded, pulses inhibited)	p2080[1] = r0899.1	[2503.7]	Sequence control	-
ZSW1.2	1 = Operation enabled (drive follows n_set)	p2080[2] = r0899.2	[2503.7]	Sequence control	-
ZSW1.3	1 = Fault present	p2080[3] = r2139.3	[2548.7]	[8060]	-
ZSW1.4	1 = No coast down active (OFF2 inactive)	p2080[4] = r0899.4	[2503.7]	Sequence control	-
ZSW1.5	1 = No quick stop active (OFF3 inactive)	p2080[5] = r0899.5	[2503.7]	Sequence control	-
ZSW1.6	1 = Switching on inhibited active	p2080[6] = r0899.6	[2503.7]	Sequence control	-
ZSW1.7	1 = Alarm present	p2080[7] = r2139.7	[2548.7]	[8065]	-
ZSW1.8	1 = Speed setpoint - actual value deviation within tolerance t_off	p2080[8] = r2197.7	[2534.7]	[8011]	-
ZSW1.9	1 = Control requested <2>	p2080[9] = r0899.9	[2503.7]	[2503]	-
ZSW1.10	1 = f or n comparison value reached/exceeded	p2080[10] = r2199.1	[2536.7]	[8010]	-
ZSW1.11	1 = I, M, or P limit not reached	p2080[11] = r1407.7	[2522.7]	[6060]	✓
ZSW1.12	1 = Open holding brake	p2080[12] = r0899.12	[2503.7]	[2701]	-
ZSW1.13	1 = No motor overtemperature alarm	p2080[13] = r2135.14	[2548.7]	[8016]	✓
ZSW1.14	1 = Motor rotates forwards (n_act ≥ 0) 0 = Motor rotates backwards (n_act < 0)	p2080[14] = r2197.3	[2534.7]	[8011]	-
ZSW1.15	1 = No alarm, thermal overload, power unit	p2080[15] = r2135.15	[2548.7]	[8014]	✓

<1> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0]...p2088[0].15).

<2> The drive is ready to accept data.

1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET)					fp_2452_97_61.vsd	Function diagram	
ZSW1 status word interconnection (p2038 = 0)					07.04.2014 V4.7	CU240B/E-2 DP/PN	
							<b>- 2452 -</b>

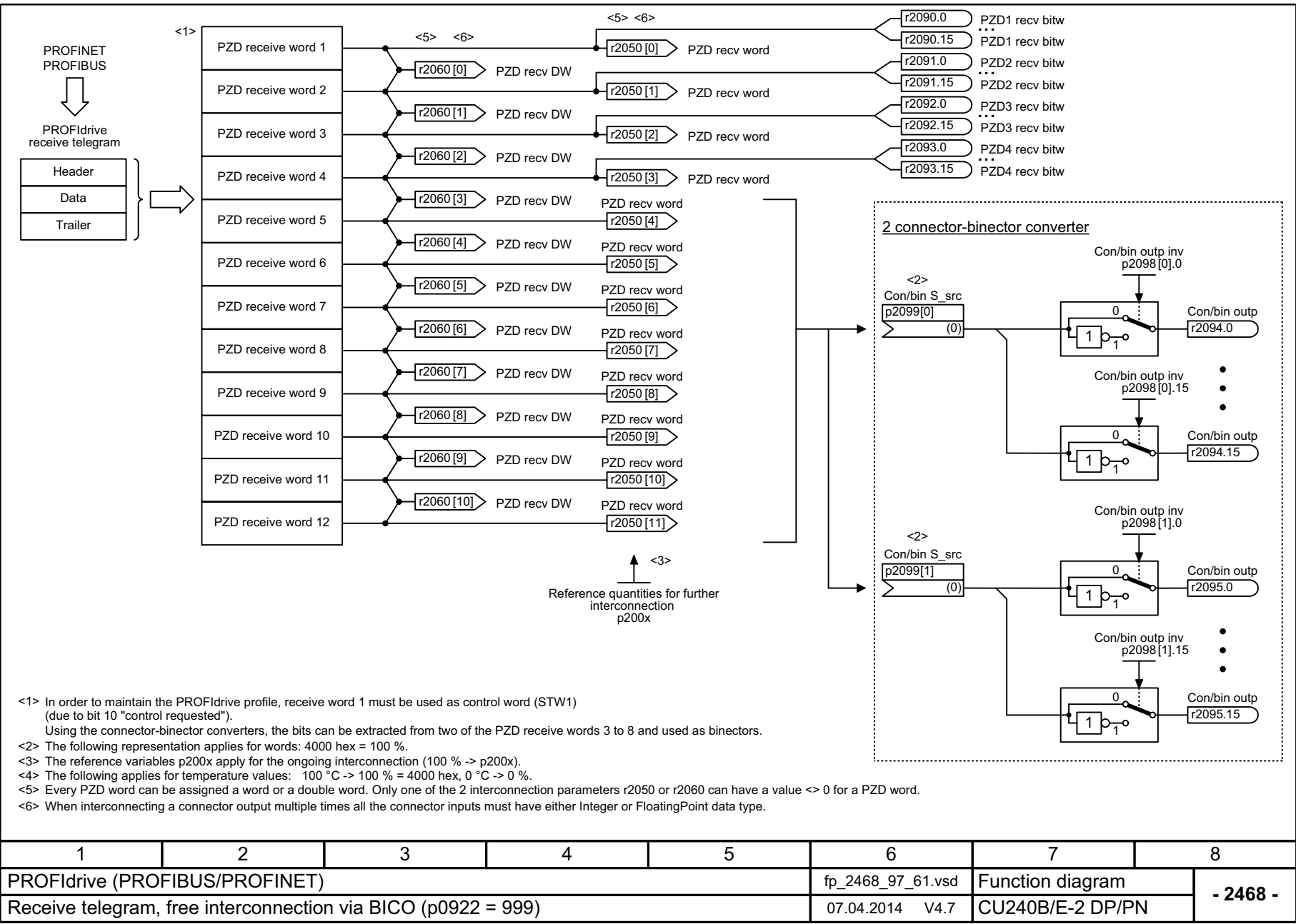
Fig. 3-30 2452 – ZSW1 status word interconnection (p2038 = 0)

Signal sources for ZSW3 im Interface Mode SINAMICS (p2038 = 0) <span style="float: right;">&lt;1&gt;</span>					
Signal	Meaning	Interconnection parameters	[Function diagram] internal status word	[Function diagram] signal source	Inverted
ZSW3.0	1 = DC braking active	p2051[3] = r0053	[2511.7]	[7017.5]	-
ZSW3.1	1 =  n_act  > p1226 (n_standstill)		[2511.7]	[2534.7]	-
ZSW3.2	1 =  n_act  > p1080 (n_min)		[2511.7]	[2534.7]	-
ZSW3.3	1 = l_act >= p2170		[2511.7]	[2534.7]	-
ZSW3.4	1 =  n_act  > p2155		[2511.7]	[2534.7]	-
ZSW3.5	1 =  n_act  <= p2155		[2511.7]	[2534.7]	-
ZSW3.6	1 =  n_act  >= r1119 (n_set)		[2511.7]	[2534.7]	-
ZSW3.7	1 = Vdc <= p2172		[2511.7]	[2534.7]	-
ZSW3.8	1 = Vdc > p2172		[2511.7]	[2534.7]	-
ZSW3.9	1 = Ramping finished		[2511.7]	[3080.7]	-
ZSW3.10	1 = Technology controller output at the lower limit		[2511.7]	[7958.7]	-
ZSW3.11	1 = Technology controller output at the upper limit		[2511.7]	[7958.7]	-
ZSW3.12	Reserved		-	-	-
ZSW3.13	Reserved		-	-	-
ZSW3.14	Reserved		-	-	-
ZSW3.15	Reserved	-	-	-	

<1> Used in telegram 350.

1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET)					fp_2456_97_61.vsd	Function diagram	
ZSW3 status word interconnection					07.04.2014 V4.7	CU240B/E-2 DP/PN	
							- 2456 -

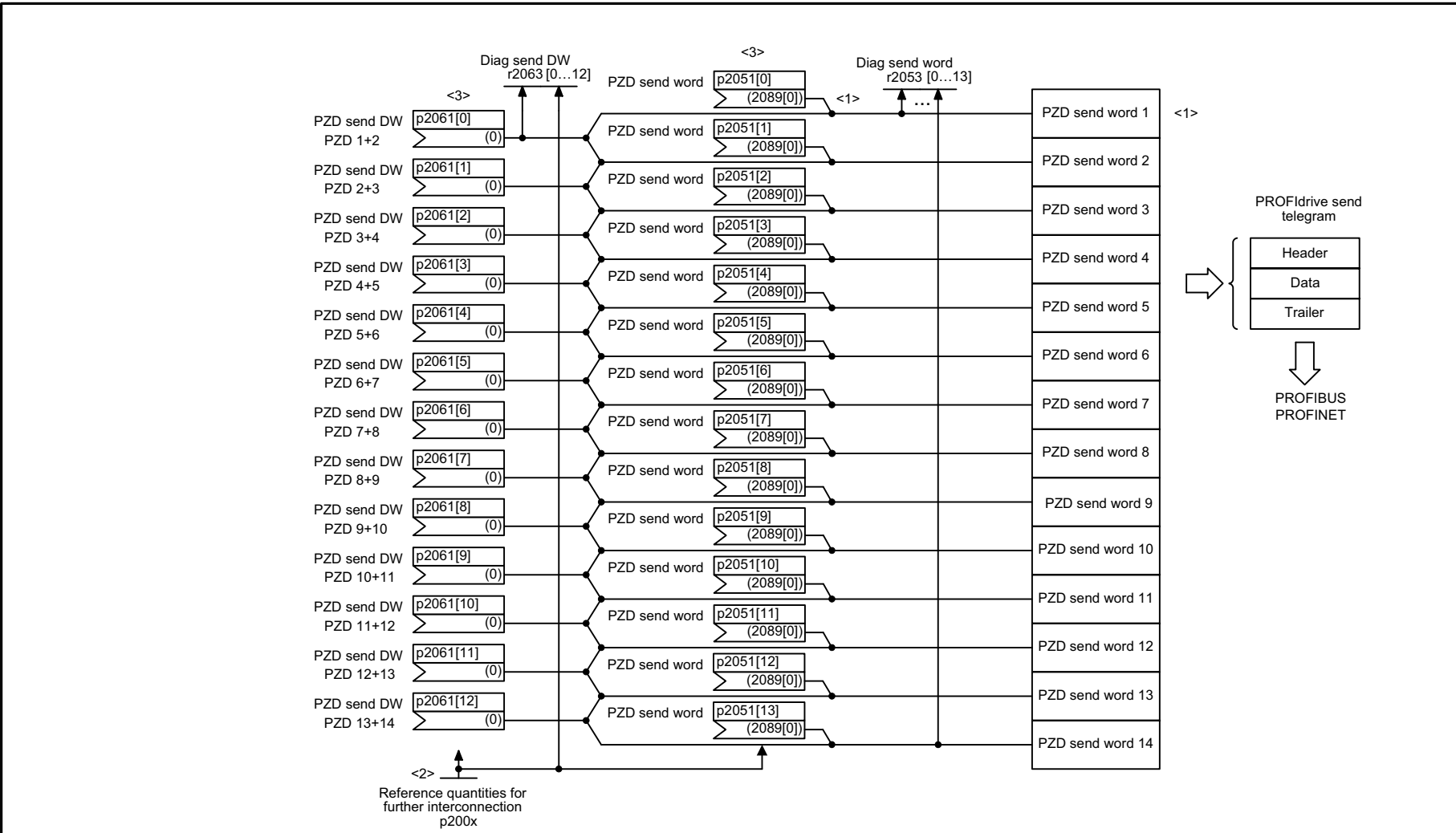
Fig. 3-31 2456 – ZSW3 status word interconnection



- <1> In order to maintain the PROFdrive profile, receive word 1 must be used as control word (STW1) (due to bit 10 "control requested").  
Using the connector-binector converters, the bits can be extracted from two of the PZD receive words 3 to 8 and used as binectors.
- <2> The following representation applies for words: 4000 hex = 100 %.
- <3> The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
- <4> The following applies for temperature values: 100 °C -> 100 % = 4000 hex, 0 °C -> 0 %.
- <5> Every PZD word can be assigned a word or a double word. Only one of the 2 interconnection parameters r2050 or r2060 can have a value <> 0 for a PZD word.
- <6> When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.

1	2	3	4	5	6	7	8
PROFdrive (PROFIBUS/PROFINET)					fp_2468_97_61.vsd	Function diagram	
Receive telegram, free interconnection via BICO (p0922 = 999)					07.04.2014 V4.7	CU240B/E-2 DP/PN	

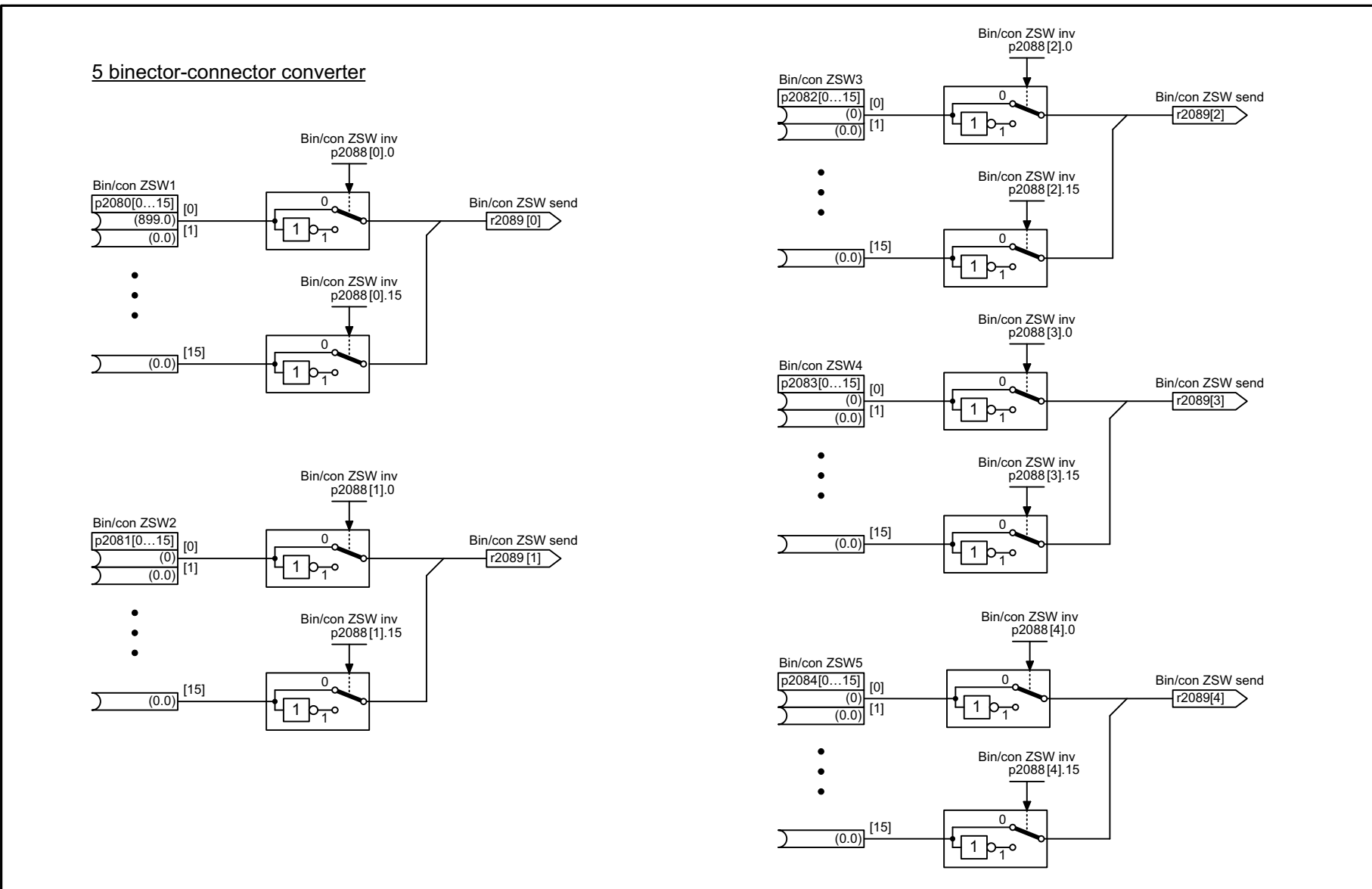
Fig. 3-32 2468 – Receive telegram, free interconnection via BICO (p0922 = 999)



<1> To comply with the PROFIdrive profile, send word 1 must be used as status word 1 (ZSW1).  
 <2> 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  
 <3> A PZD send word can either be supplied via connector input p2051[x] (WORD) or via p2061[x] (DWORD). The two corresponding connector inputs cannot be interconnected.

1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET)					fp_2470_97_61.vsd	Function diagram	
Send telegram, free interconnection via BICO (p0922 = 999)					07.04.2014 V4.7	CU240B/E-2 DP/PN	
							- 2470 -

Fig. 3-33 2470 – Send telegram, free interconnection via BICO (p0922 = 999)



1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET)					fp_2472_97_51.vsd	Function diagram	
Status words, free interconnection					07.04.2014 V4.7	CU240B/E-2 DP/PN	

Fig. 3-34 2472 – Status words, free interconnection



## 3.6 Communication, fieldbus interface (USS, MODBUS)

### Function diagrams

9310 – Configuration, addresses and diagnostics	554
9342 – STW1 control word interconnection	555
9352 – ZSW1 status word interconnection	556
9360 – Receive telegram, free interconnection via BICO (p0922 = 999)	557
9370 – Send telegram, free interconnection via BICO (p0922 = 999)	558
9372 – Status words, free interconnection	559

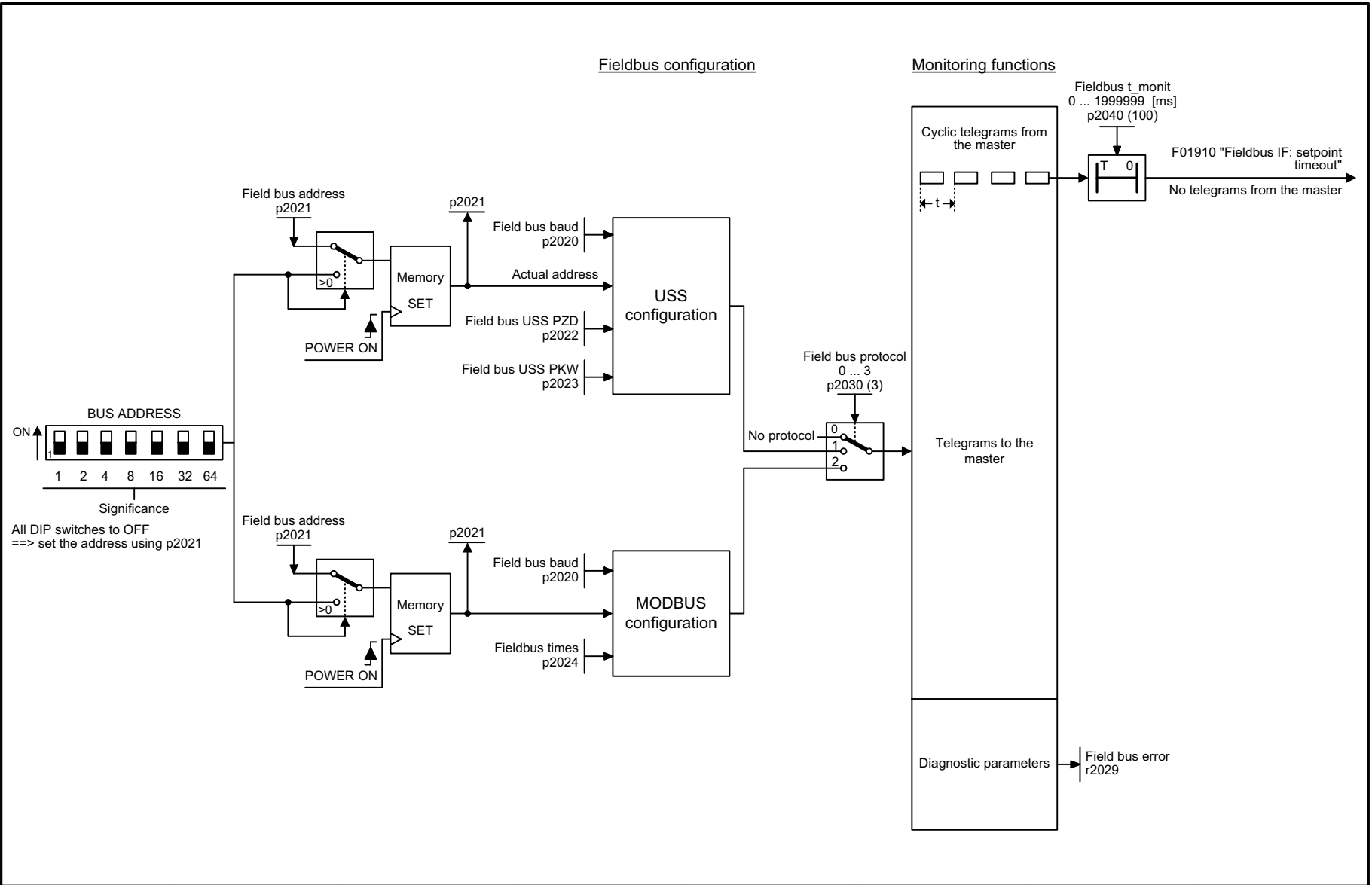
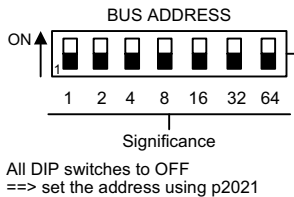


Fig. 3-35 9310 – Configuration, addresses and diagnostics



1	2	3	4	5	6	7	8
Fieldbus Interface (USS, MODBUS)					fp_9310_97_66.vsd	Function diagram	
Configuration, addresses and diagnostics					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 9310 -</b>

<b>Signal targets for fieldbus STW1</b>							
Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted		
STW1.0	⏏ = ON (pulses can be enabled) 0 = OFF1 (braking with ramp-function generator, then pulse suppression & ready for switching on)	p0840[0] = r2090.0	[2501.3]	Sequence control	-		
STW1.1	1 = No OFF2 (enable is possible) 0 = OFF2 (immediate pulse suppression and switching on inhibited)	p0844[0] = r2090.1	[2501.3]	Sequence control	-		
STW1.2	1 = No OFF3 (enable is possible) 0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)	p0848[0] = r2090.2	[2501.3]	Sequence control	-		
STW1.3	1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (suppress pulses)	p0852[0] = r2090.3	[2501.3]	Sequence control	-		
STW1.4	1 = Ramp-function generator enable 0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)	p1140[0] = r2090.4	[2501.3]	[3060], [3070], [3080]	-		
STW1.5	1 = Continue ramp-function generator 0 = Freezes the ramp-function generator	p1141[0] = r2090.5	[2501.3]	[3060], [3070]	-		
STW1.6	1 = Setpoint enable 0 = Inhibits the setpoint (the ramp-function generator input is set to zero)	p1142[0] = r2090.6	[2501.3]	[3060], [3070], [3080]	-		
STW1.7	⏏ = Acknowledge faults	p2103[0] = r2090.7	[2546.1]	[8060]	-		
STW1.8	Reserved	-	-	-	-		
STW1.9	Reserved	-	-	-	-		
STW1.10	1 = Control via PLC <span style="float: right;">&lt;1&gt;</span>	p0854[0] = r2090.10	[2501.3]	[2501]	-		
STW1.11	1 = Dir of rot reversal <span style="float: right;">&lt;2&gt;</span>	p1113[0] = r2090.11	[2505.3]	[3040]	-		
STW1.12	Reserved	-	-	-	-		
STW1.13	1 = Motorized potentiometer, setpoint, raise	p1035[0] = r2090.13	[2505.3]	[3020]	-		
STW1.14	1 = Motorized potentiometer, setpoint, lower	p1036[0] = r2090.14	[2505.3]	[3020]	-		
STW1.15	Reserved	-	-	-	-		

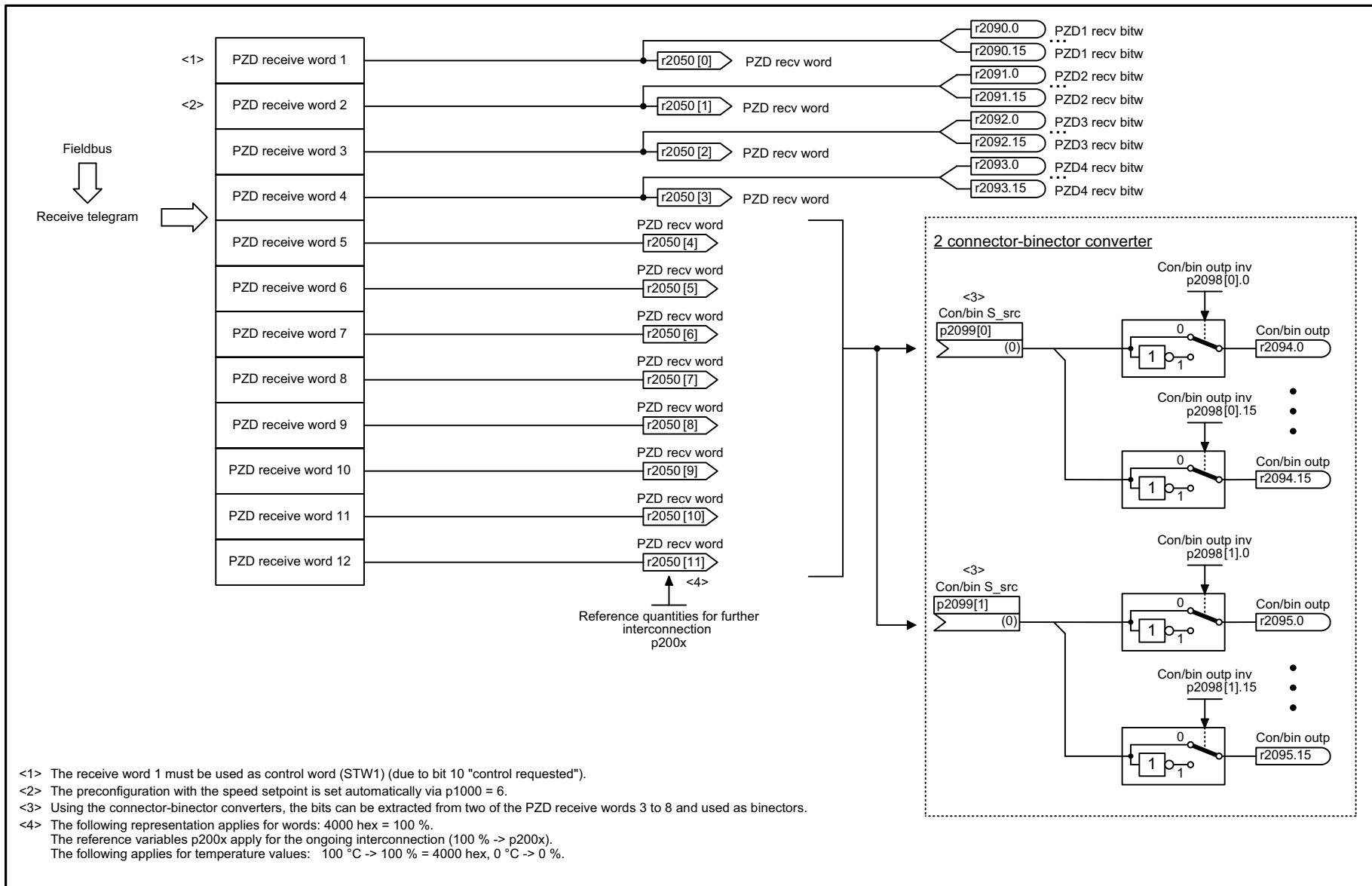
<1> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.  
 <2> The direction reversal can be locked. See p1110 and p1111.

1	2	3	4	5	6	7	8
Fieldbus Interface (USS, MODBUS)					fp_9342_97_62.vsd	Function diagram	
STW1 control word interconnection					07.04.2014 V4.7	G120 CU240B/E-2	
							- 9342 -

Fig. 3-36 9342 – STW1 control word interconnection

Signal sources for fieldbus ZSW1							
Signal	Meaning	Interconnection parameters	[Function diagram] internal control word	[Function diagram] signal target	Inverted <1>		
ZSW1.0	1 = Ready for switching on	p2080[0] = r0899.0	[2503.7]	Sequence control	-		
ZSW1.1	1 = Ready for operation (DC link loaded, pulses inhibited)	p2080[1] = r0899.1	[2503.7]	Sequence control	-		
ZSW1.2	1 = Operation enabled (drive follows n_set)	p2080[2] = r0899.2	[2503.7]	Sequence control	-		
ZSW1.3	1 = Fault present	p2080[3] = r2139.3	[2548.7]	[8060]	-		
ZSW1.4	1 = No coast down active (OFF2 inactive)	p2080[4] = r0899.4	[2503.7]	Sequence control	-		
ZSW1.5	1 = No quick stop active (OFF3 inactive)	p2080[5] = r0899.5	[2503.7]	Sequence control	-		
ZSW1.6	1 = Switching on inhibited active	p2080[6] = r0899.6	[2503.7]	Sequence control	-		
ZSW1.7	1 = Alarm present	p2080[7] = r2139.7	[2548.7]	[8065]	-		
ZSW1.8	1 = Speed setpoint - actual value deviation within tolerance t_off	p2080[8] = r2197.7	[2534.7]	[8011]	-		
ZSW1.9	1 = Control requested <2>	p2080[9] = r0899.9	[2503.7]	[2503]	-		
ZSW1.10	1 = f or n comparison value reached/exceeded	p2080[10] = r2199.1	[2536.7]	[8010]	-		
ZSW1.11	1 = I, M, or P limit not reached	p2080[11] = r1407.7	[2522.7]	[6060]	✓		
ZSW1.12	1 = Open holding brake	p2080[12] = r0899.12	[2503.7]	[2701]	-		
ZSW1.13	1 = No motor overtemperature alarm	p2080[13] = r2135.14	[2548.7]	[8016]	✓		
ZSW1.14	1 = Motor rotates forwards (n_act ≥ 0) 0 = Motor rotates backwards (n_act < 0)	p2080[14] = r2197.3	[2534.7]	[8011]	-		
ZSW1.15	1 = No alarm, thermal overload, power unit	p2080[15] = r2135.15	[2548.7]	[8014]	✓		
<1> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2088[0]...p2088[0].15). <2> The drive is ready to accept data.							
1	2	3	4	5	6	7	8
Fieldbus Interface (USS, MODBUS)				fp_9352_97_62.vsd		Function diagram	
ZSW1 status word interconnection				07.04.2014 V4.7		G120 CU240B/E-2	
							<b>- 9352 -</b>

Fig. 3-37 9352 – ZSW1 status word interconnection



- <1> The receive word 1 must be used as control word (STW1) (due to bit 10 "control requested").
- <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 %.

Fig. 3-38 9360 – Receive telegram, free interconnection via BICO (p0922 = 999)

SINAMICS G120 Control Units CU240B-2/CU240E-2  
List Manual (LH11), 04/2014, A5E33839529B AA

1	2	3	4	5	6	7	8
Fieldbus Interface (USS, MODBUS)					fp_9360_97_52.vsd	Function diagram	
Receive telegram, free interconnection via BICO (p0922 = 999)					07.04.2014 V4.7	G120 CU240B/E-2	
							- 9360 -

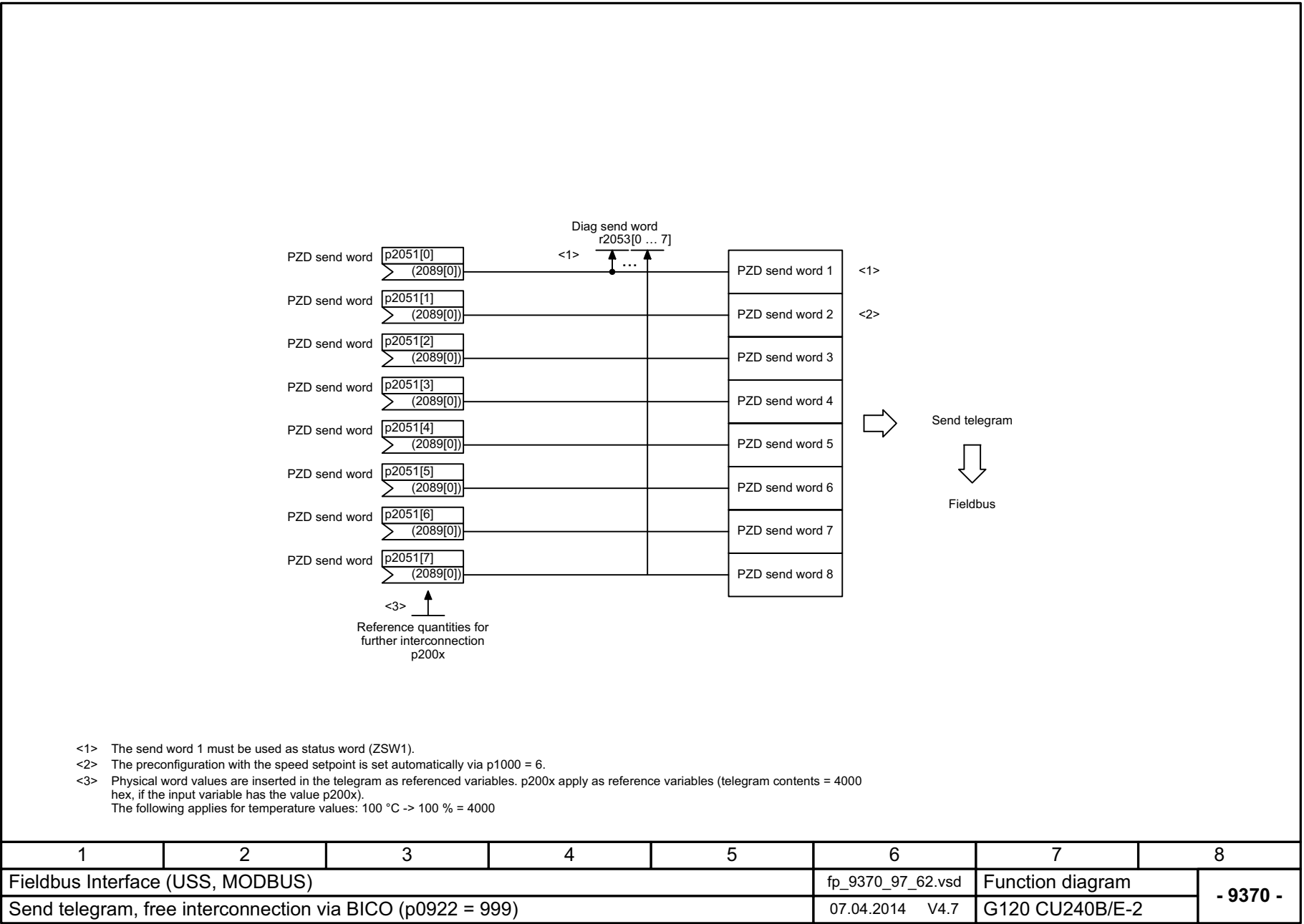
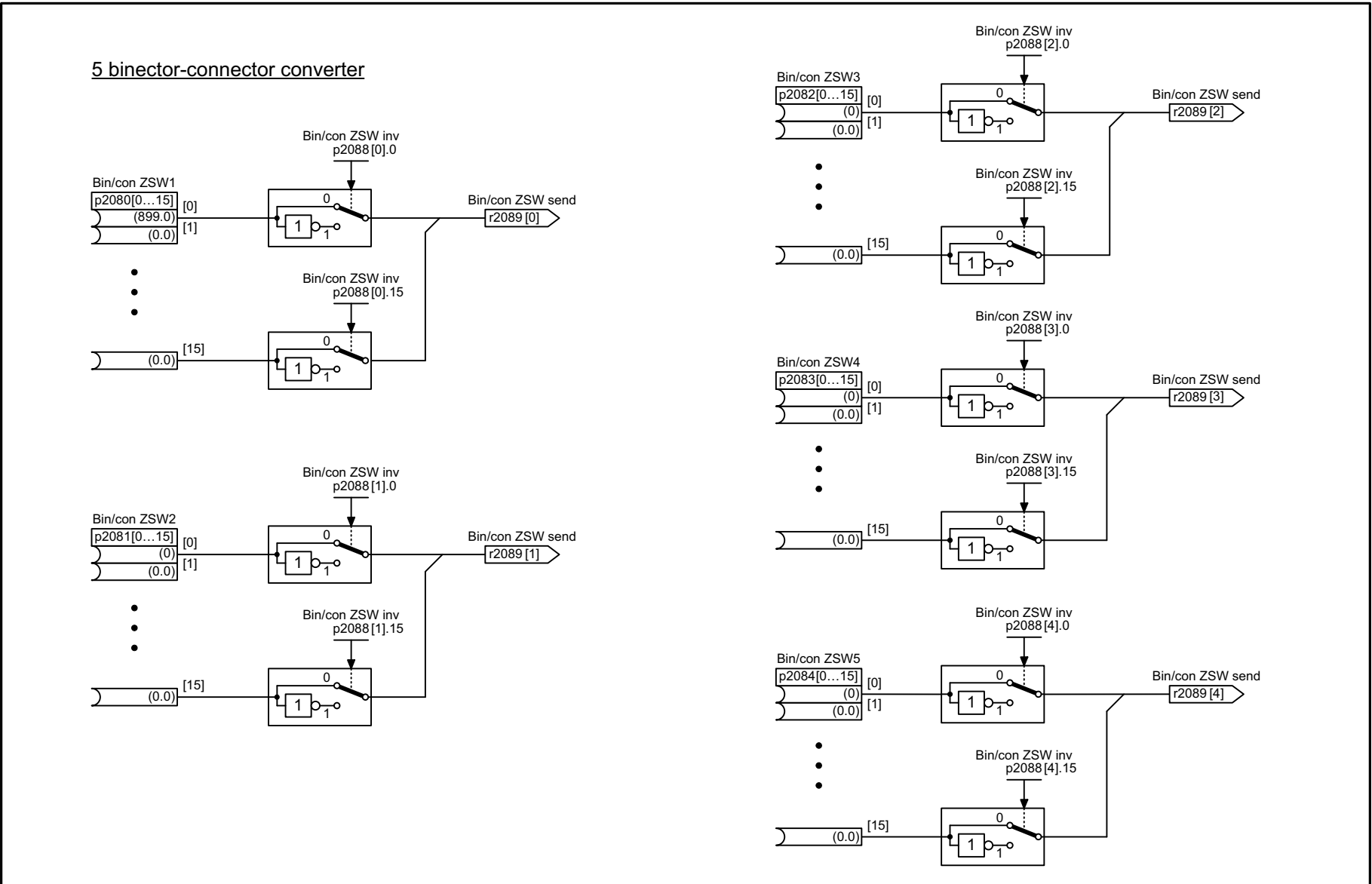


Fig. 3-39 9370 – Send telegram, free interconnection via BICO (p0922 = 999)



1	2	3	4	5	6	7	8
Fieldbus Interface (USS, MODBUS)					fp_9372_97_52.vsd	Function diagram	
Status words, free interconnection					07.04.2014 V4.7	G120 CU240B/E-2	
							- 9372 -

Fig. 3-40 9372 – Status words, free interconnection

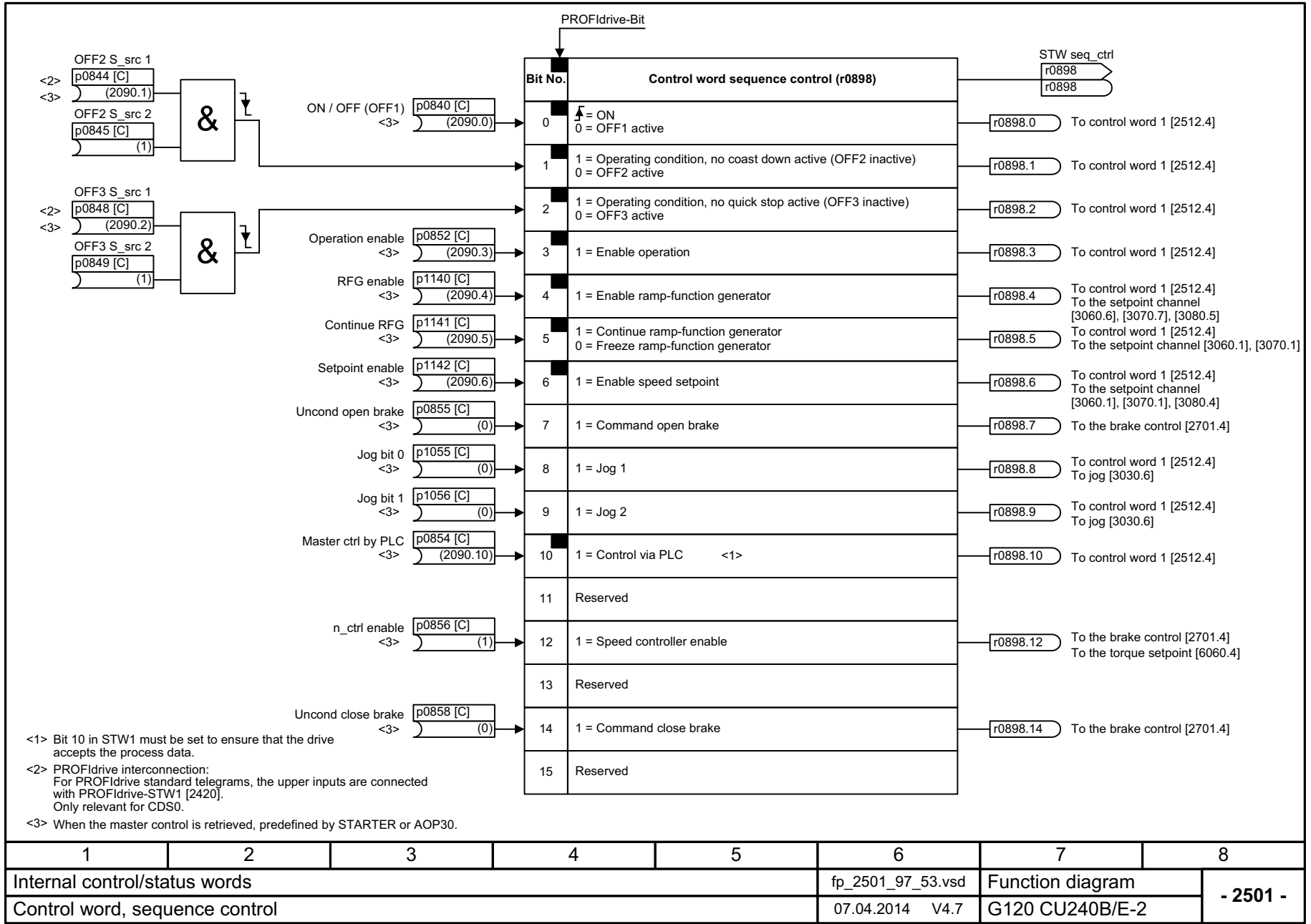
## 3.7 Internal control/status words

### Function diagrams

2501 – Control word, sequence control	561
2503 – Status word, sequence control	562
2505 – Control word, setpoint channel	563
2510 – Status word 1 (r0052)	564
2511 – Status word 2 (r0053)	565
2512 – Control word 1 (r0054)	566
2513 – Control word 2 (r0055)	567
2520 – Control word, speed controller	568
2522 – Status word, speed controller	569
2526 – Status word, closed-loop control	570
2530 – Status word, closed-loop current control	571
2534 – Status word, monitoring functions 1	572
2536 – Status word, monitoring functions 2	573
2537 – Status word, monitoring functions 3	574
2546 – Control word, faults/alarms	575
2548 – Status word, faults/alarms 1 and 2	576
2610 – Sequence control - sequencer	577
2634 – Sequence control - missing enable signals	578



Fig. 3-41 2501 – Control word, sequence control



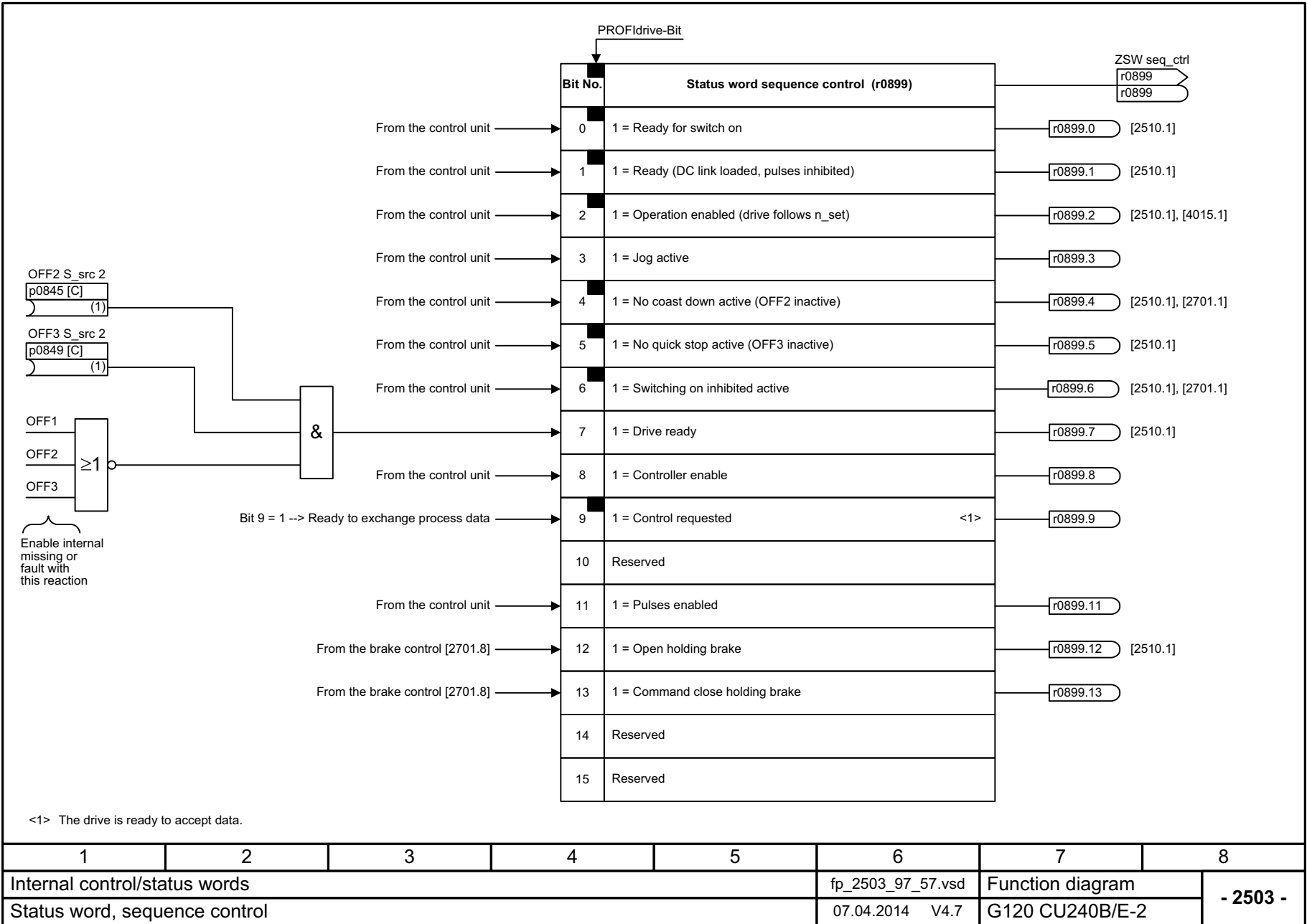
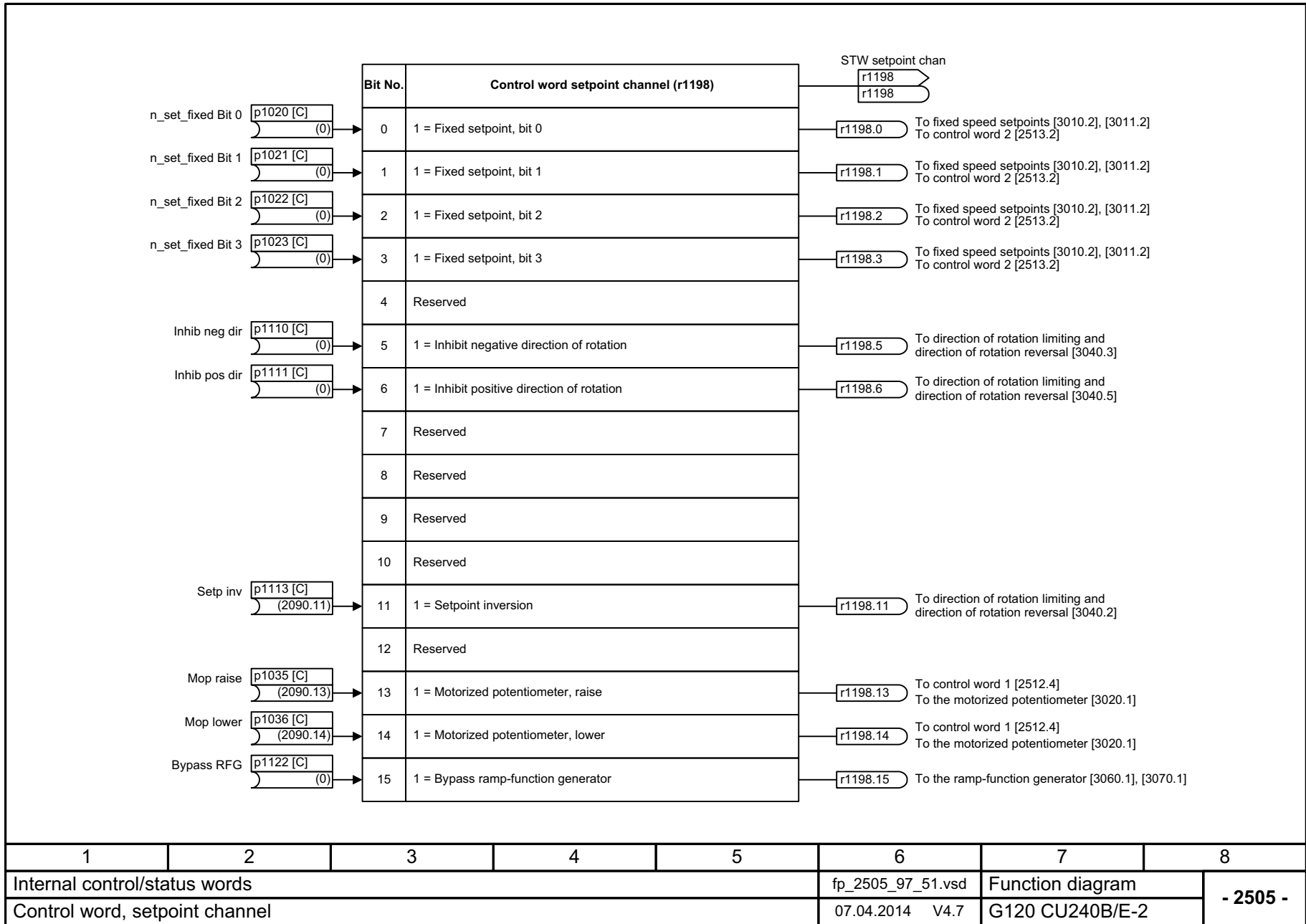
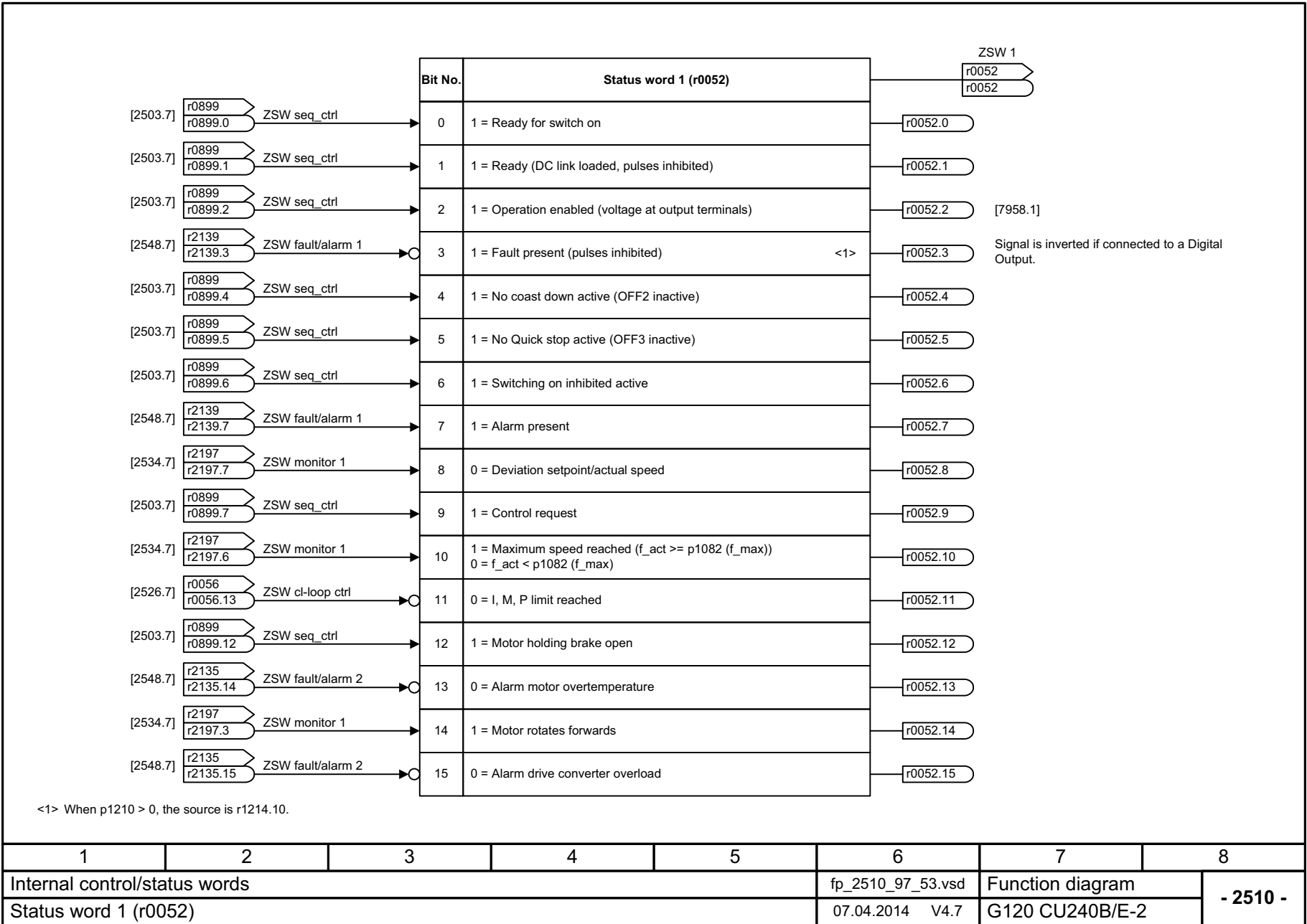


Fig. 3-42 2503 – Status word, sequence control

1	2	3	4	5	6	7	8
Internal control/status words					fp_2503_97_57.vsd	Function diagram	
Status word, sequence control					07.04.2014 V4.7	G120 CU240B/E-2	
- 2503 -							

Fig. 3-43 2505 – Control word, setpoint channel





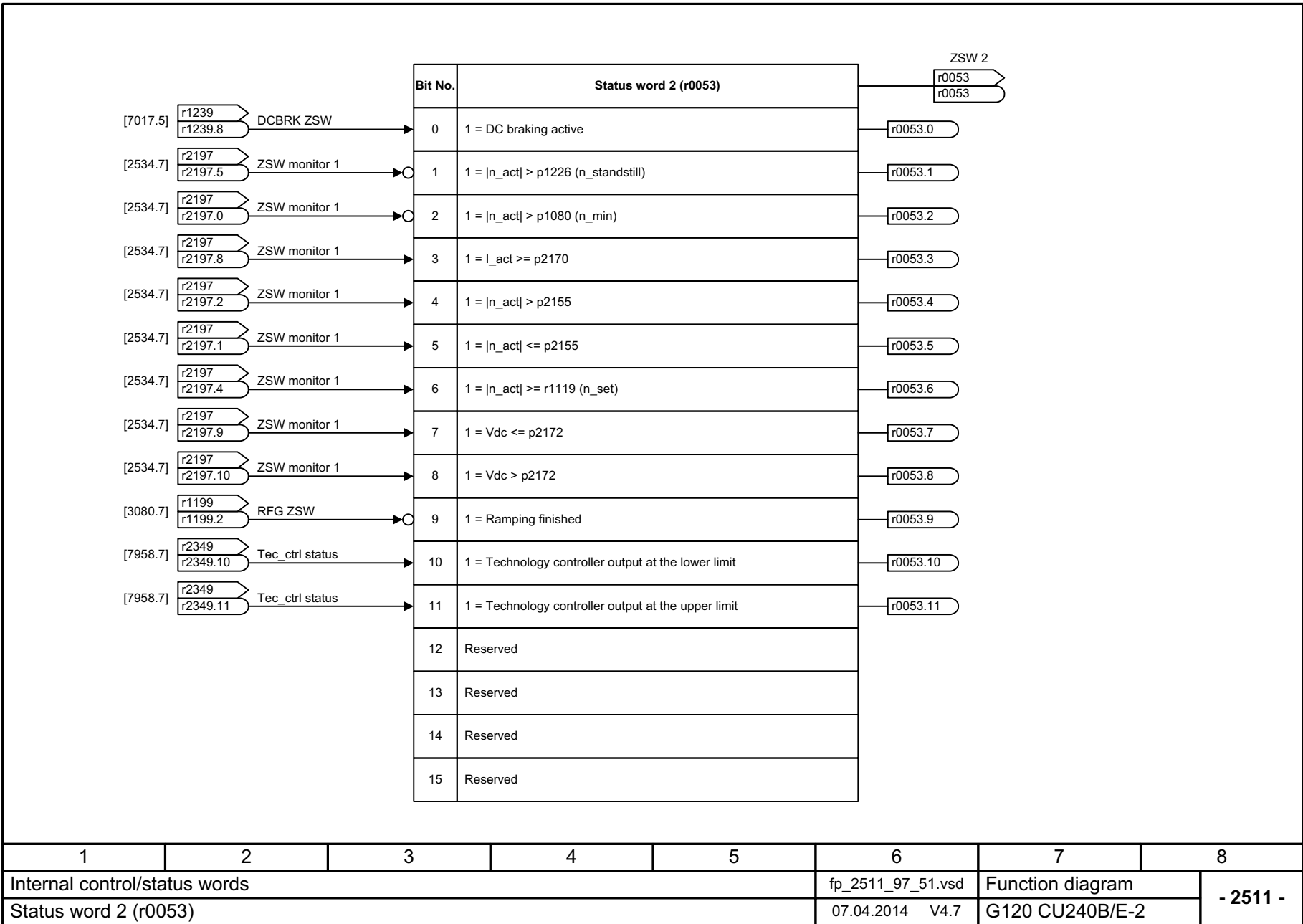


Fig. 3-45 2511 – Status word 2 (r0053)

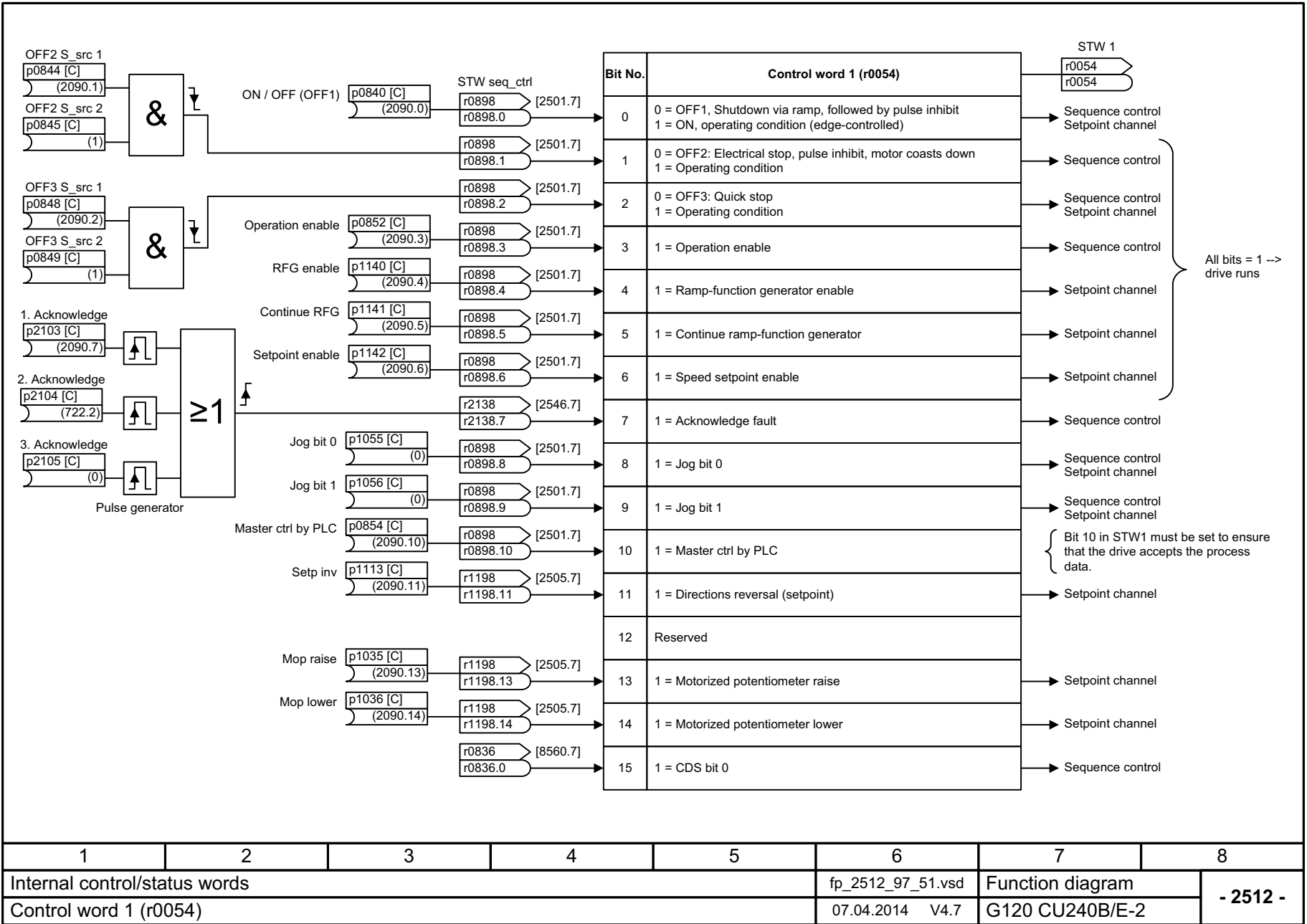


Fig. 3-46 2512 – Control word 1 (r0054)

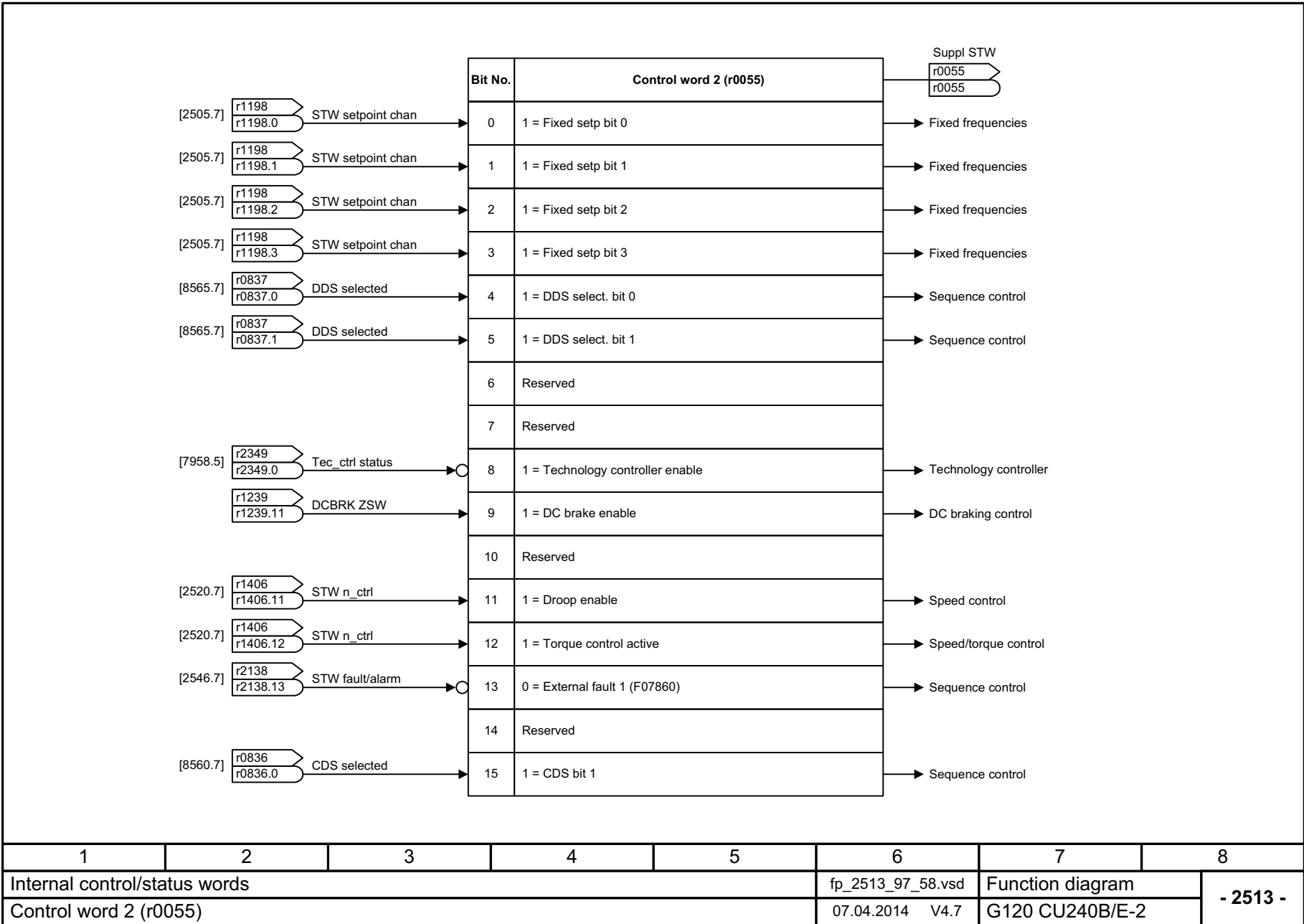


Fig. 3-47 2513 – Control word 2 (r0055)

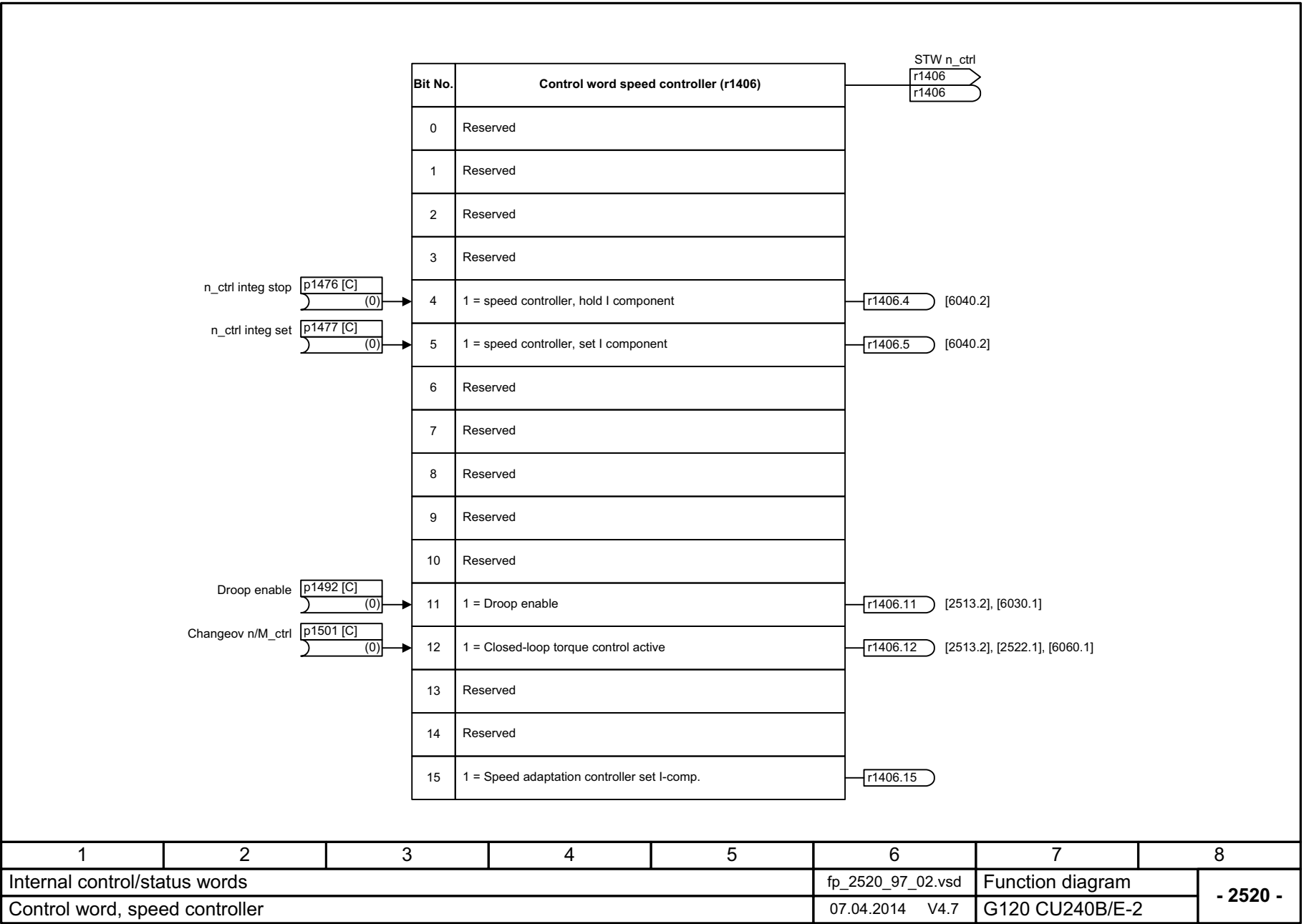
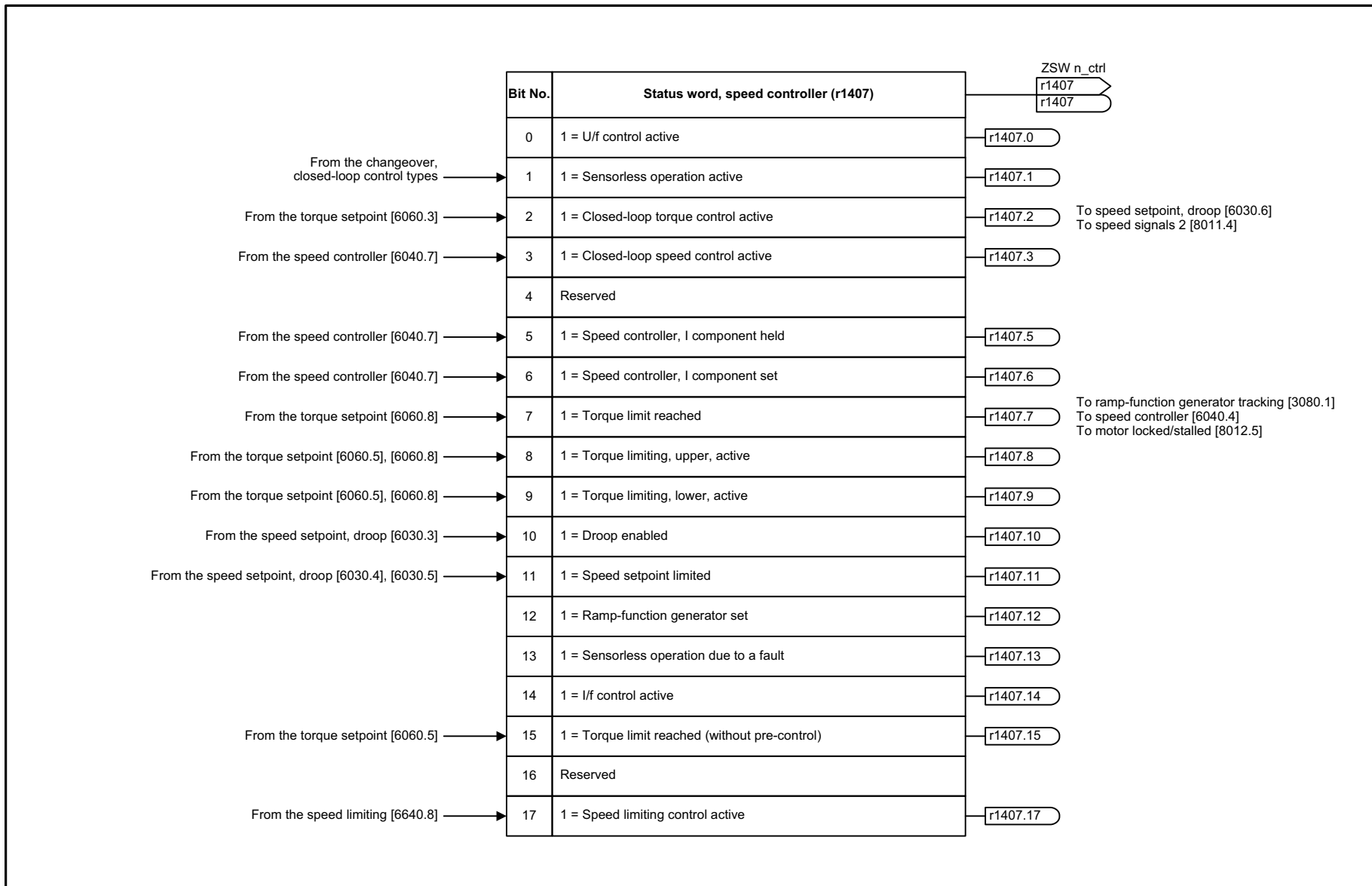


Fig. 3-48 2520 – Control word, speed controller





1	2	3	4	5	6	7	8
Internal control/status words					fp_2522_97_02.vsd	Function diagram	
Status word, speed controller (r1407)					07.04.2014 V4.7	G120 CU240B/E-2	

Fig. 3-49 2522 – Status word, speed controller

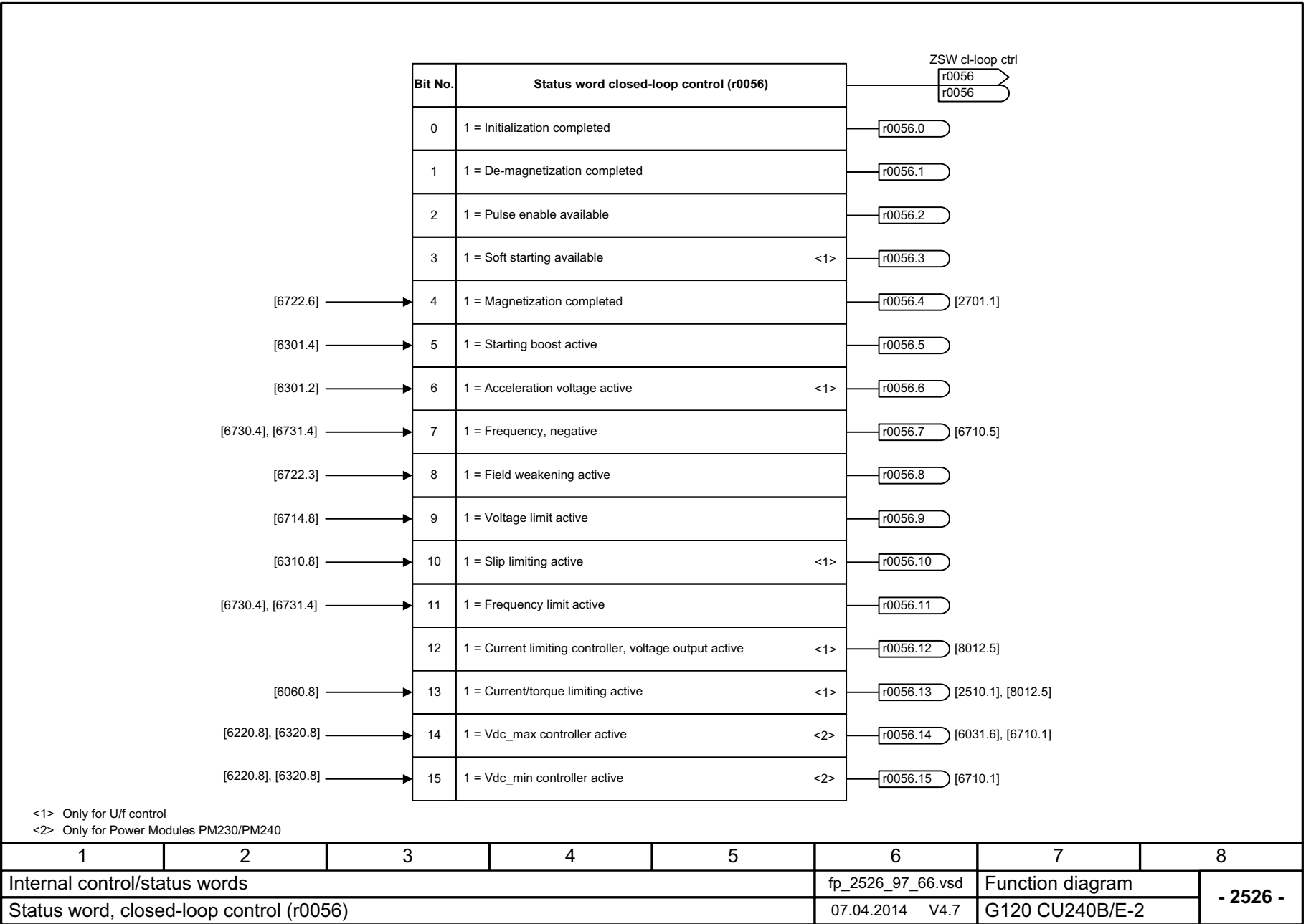


Fig. 3-50 2526 – Status word, closed-loop control

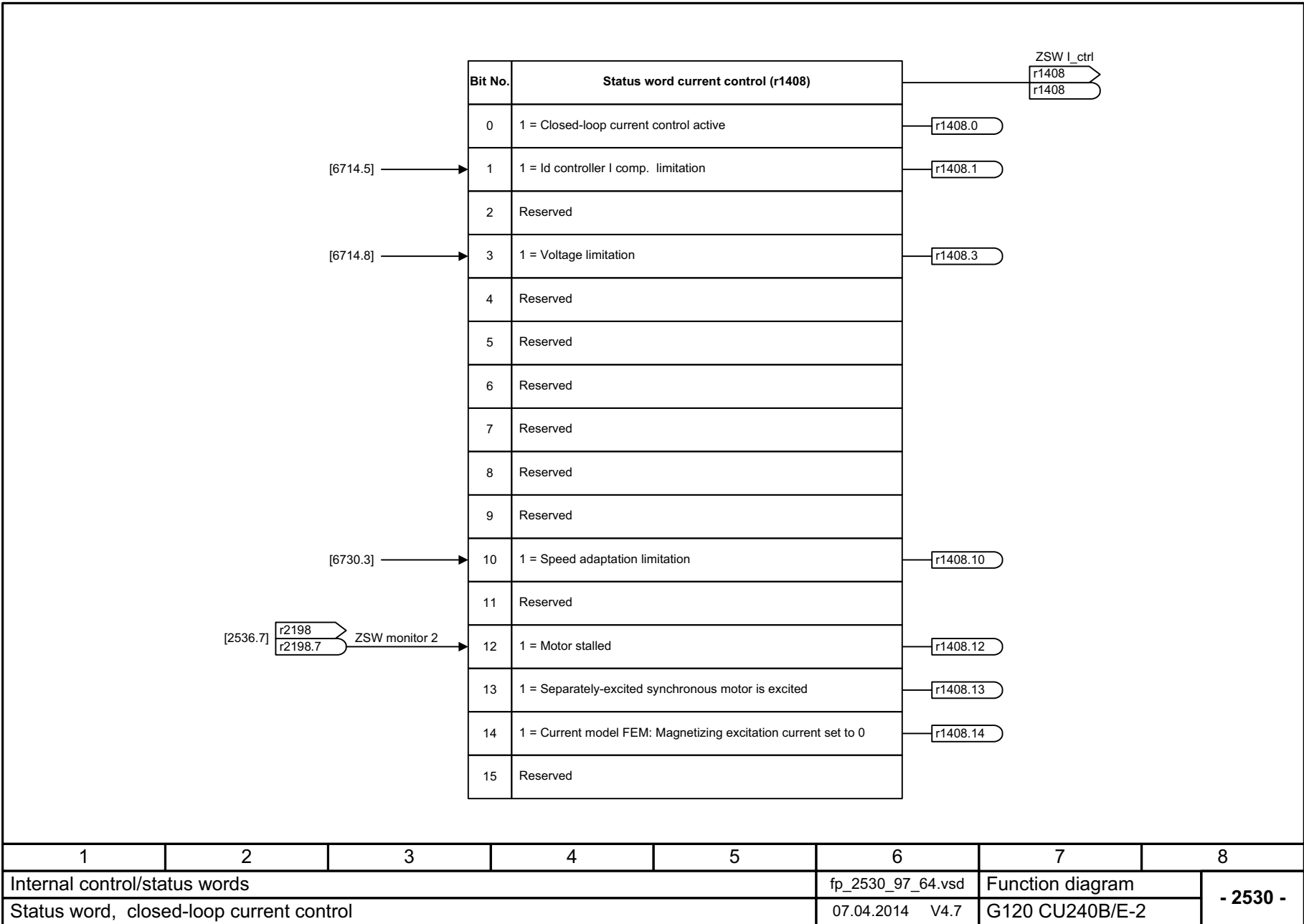


Fig. 3-51 2530 – Status word, closed-loop current control

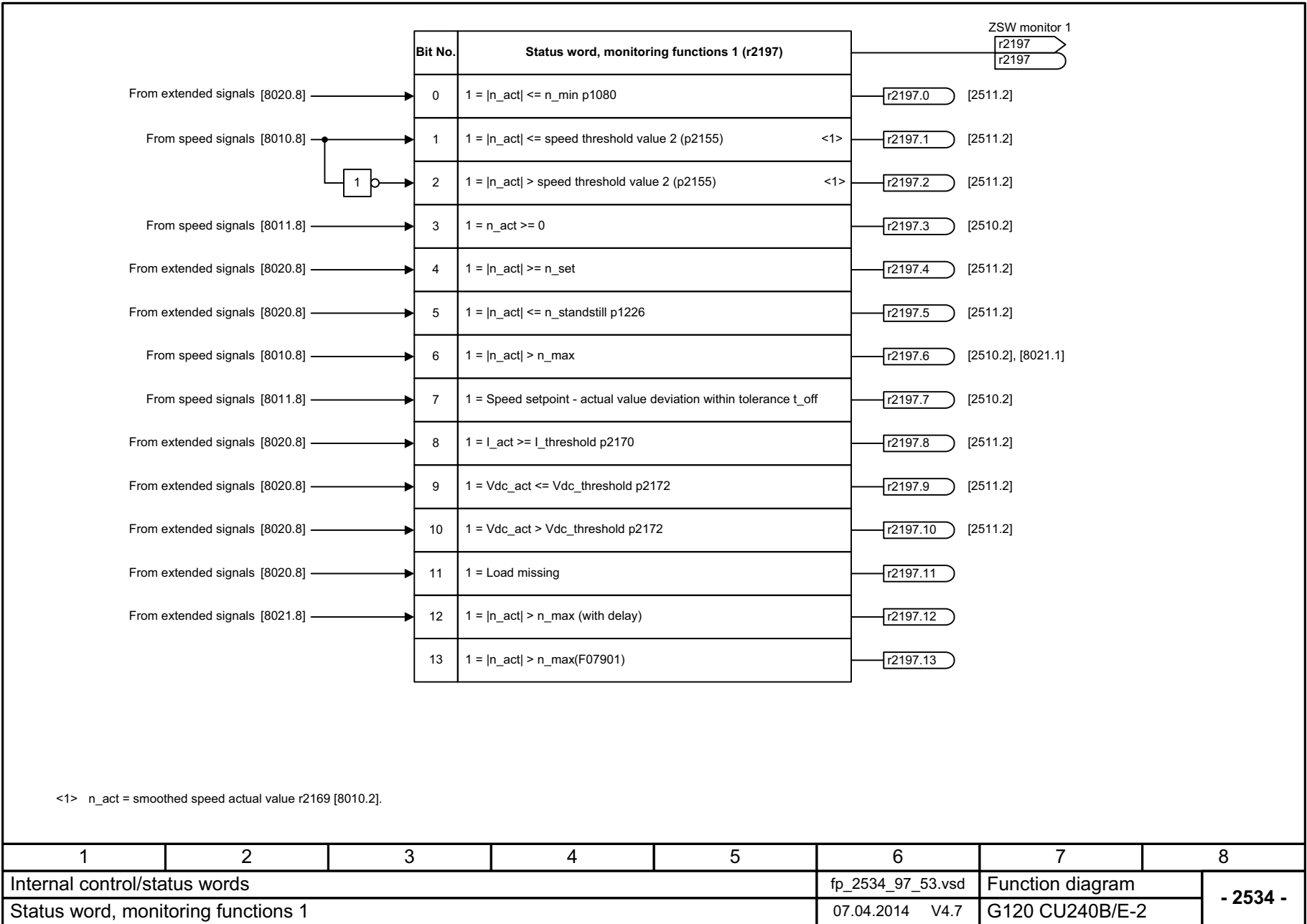


Fig. 3-52 2534 – Status word, monitoring functions 1

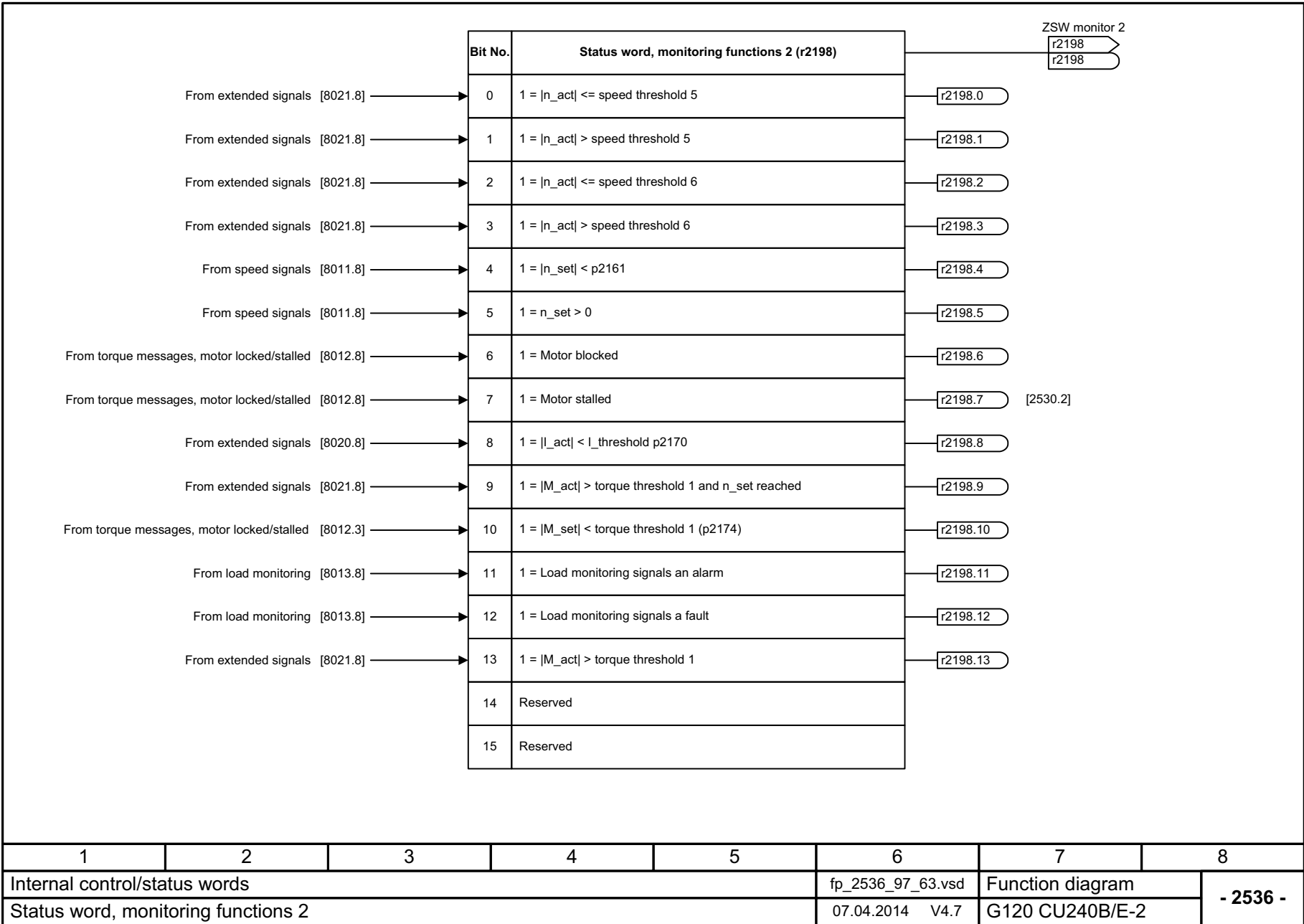


Fig. 3-53 2536 – Status word, monitoring functions 2

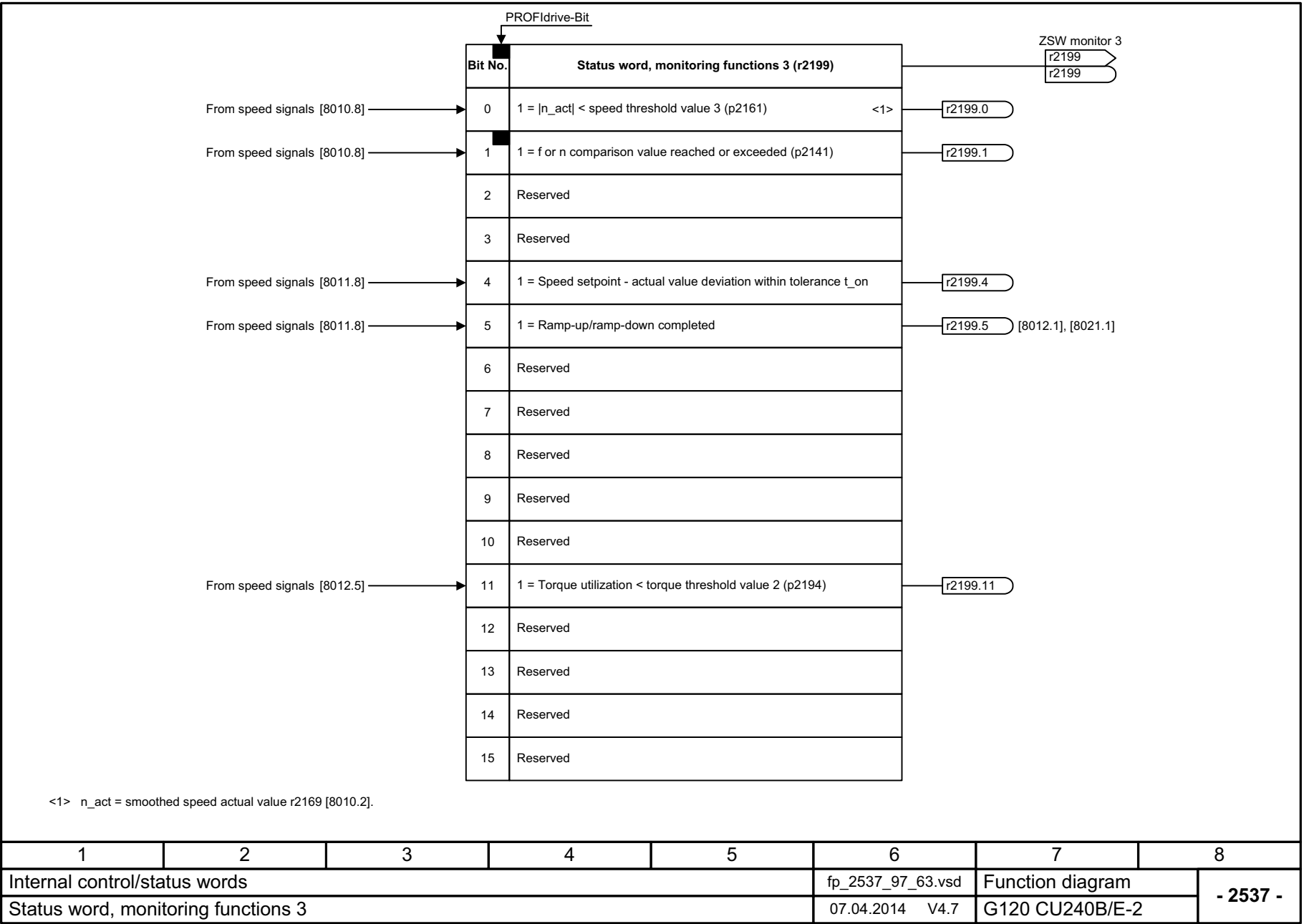


Fig. 3-54 2537 – Status word, monitoring functions 3

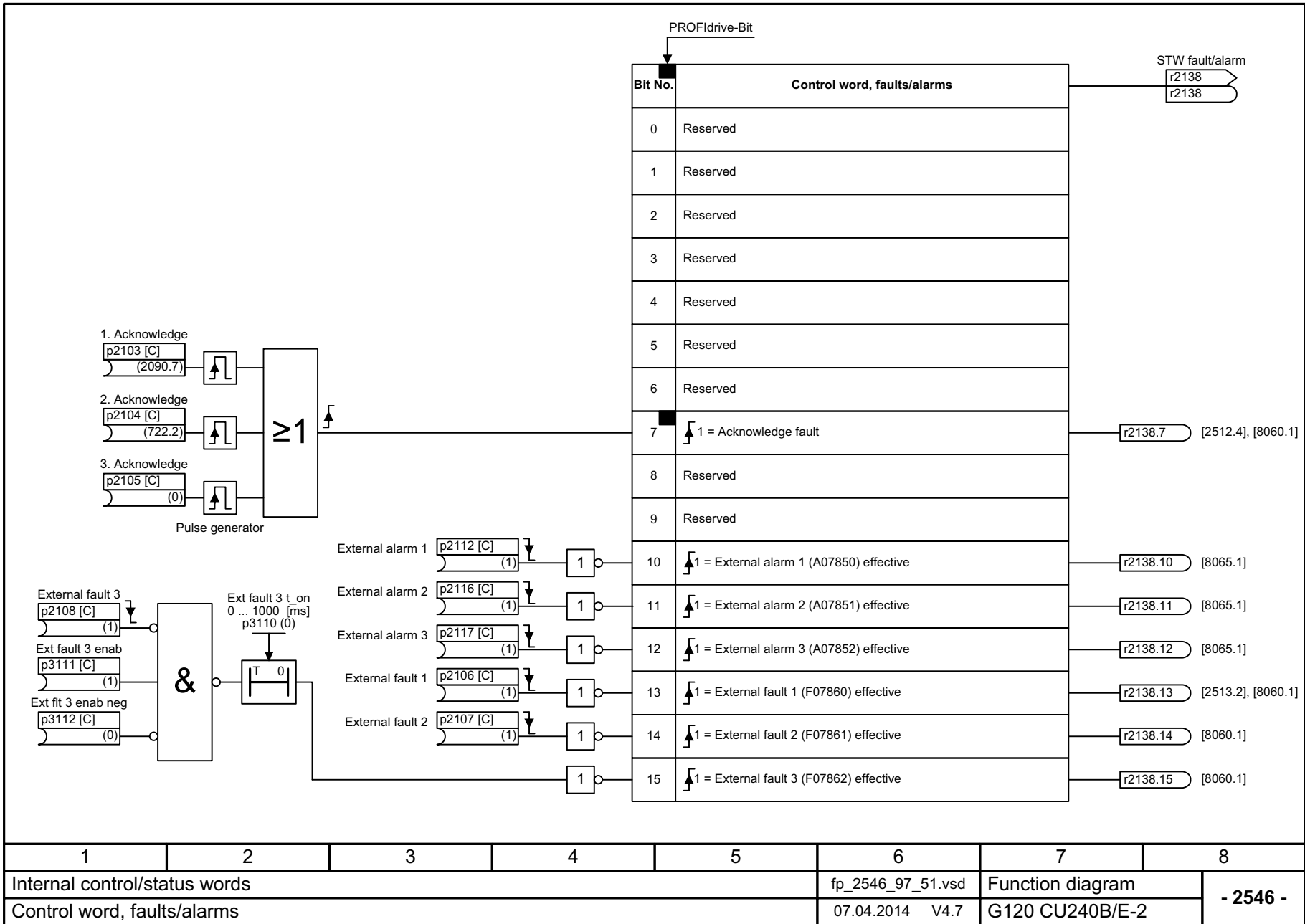


Fig. 3-55 2546 – Control word, faults/alarms

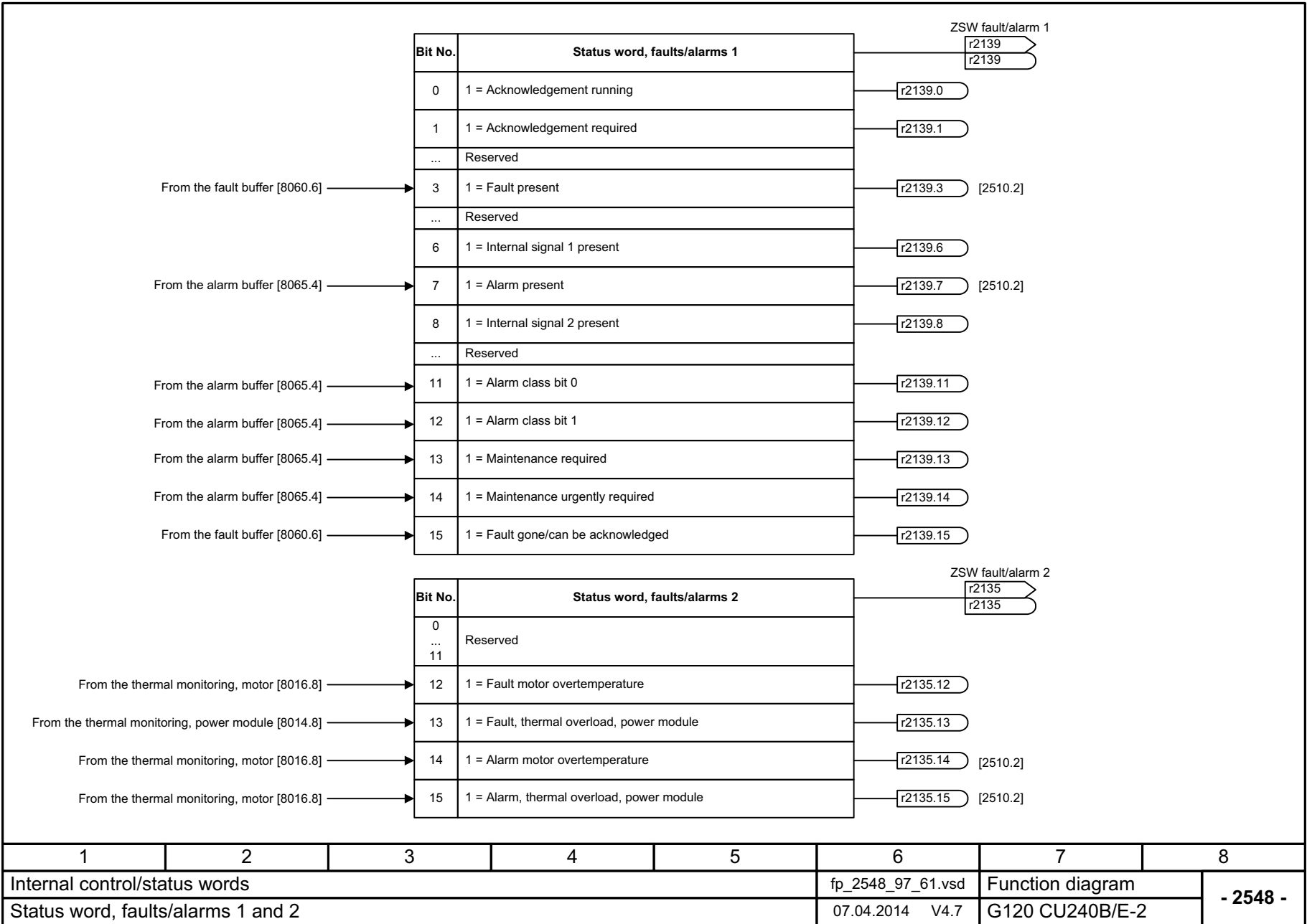
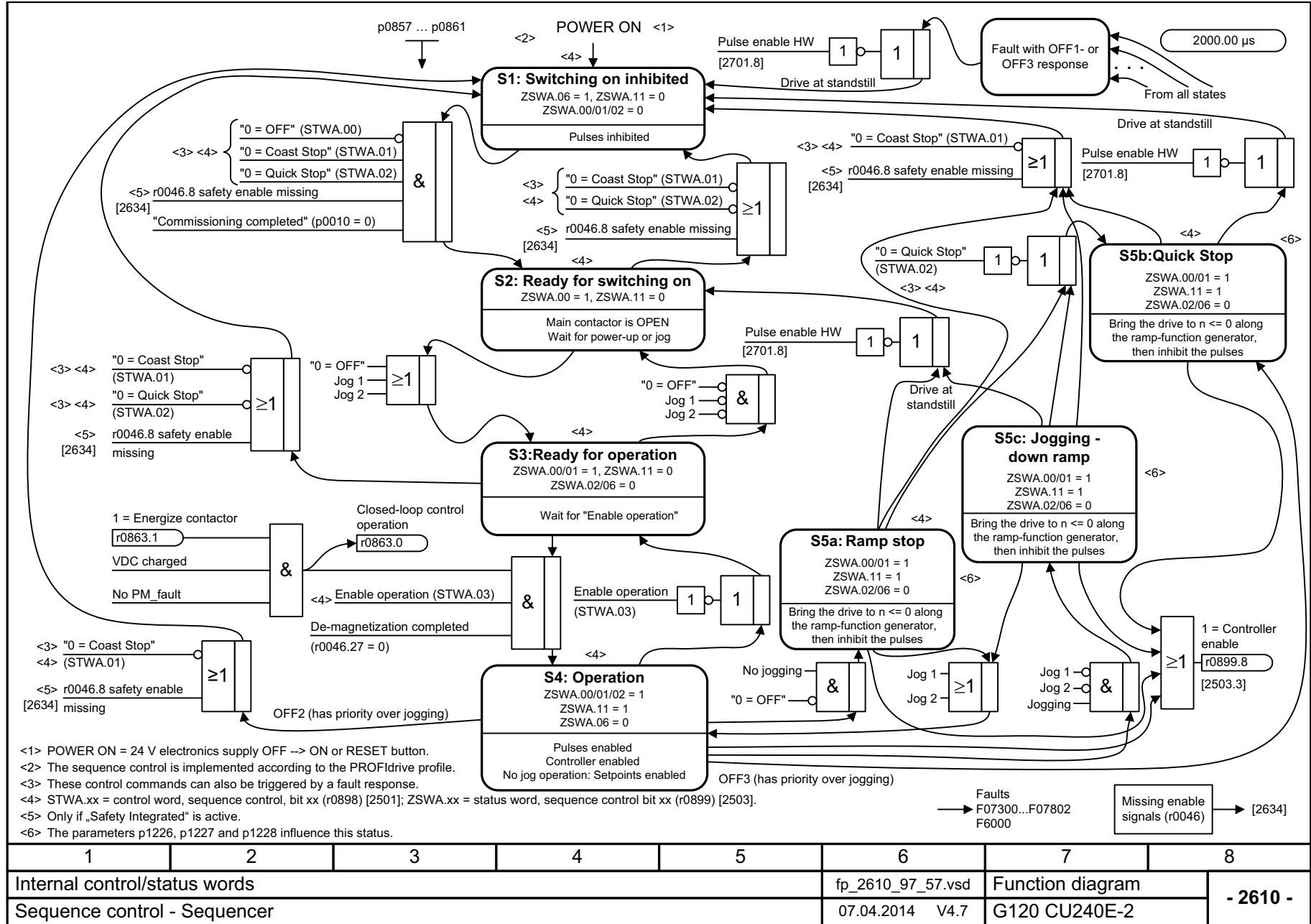


Fig. 3-56 2548 – Status word, faults/alarms 1 and 2



Fig. 3-57 2610 – Sequence control - sequencer



1	2	3	4	5	6	7	8
Internal control/status words					fp_2610_97_57.vsd	Function diagram	
Sequence control - Sequencer					07.04.2014 V4.7	G120 CU240E-2	
							- 2610 -

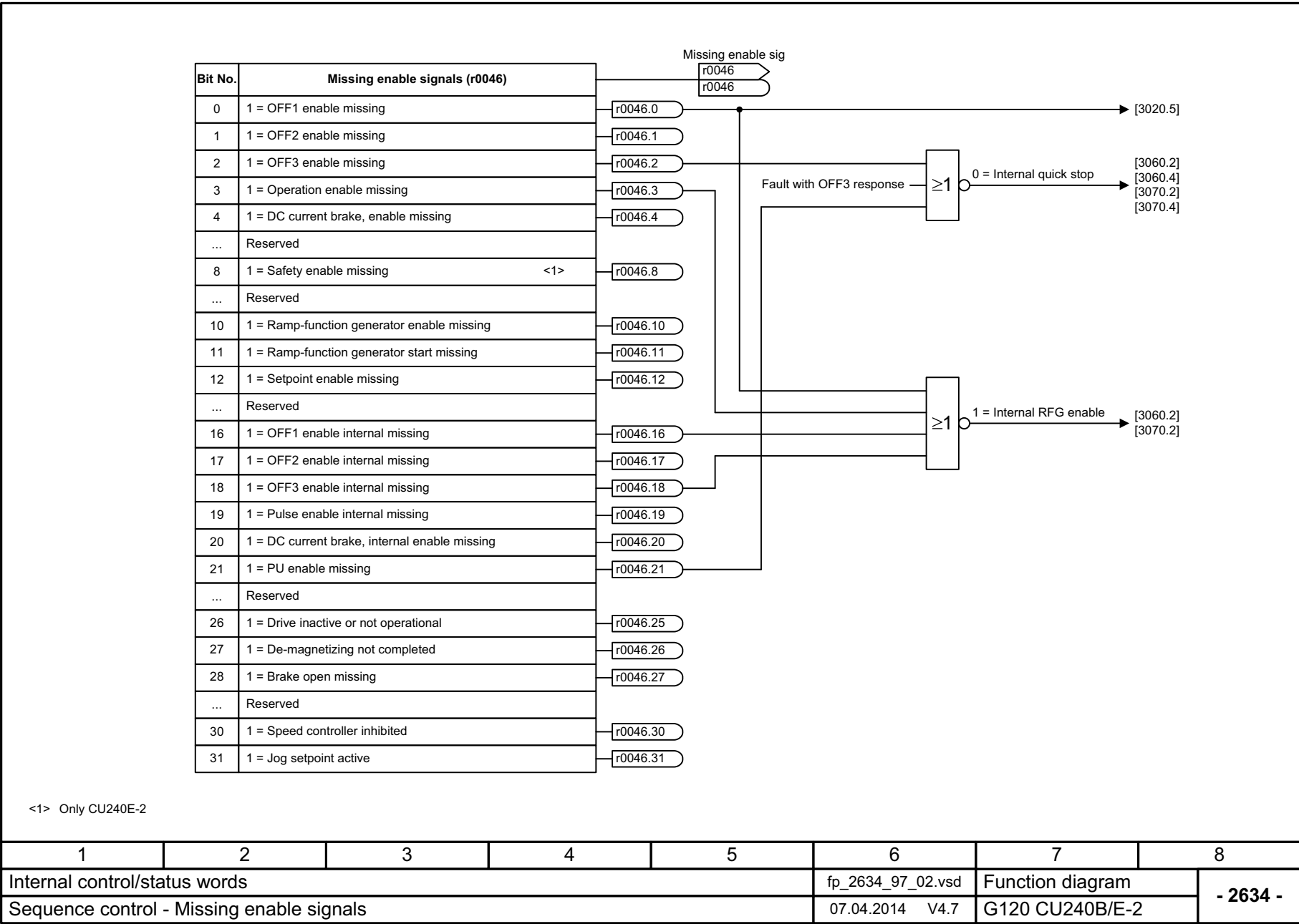


Fig. 3-58 2634 – Sequence control - missing enable signals

## 3.8 Brake control

### Function diagrams

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2701 – Basic brake control

580

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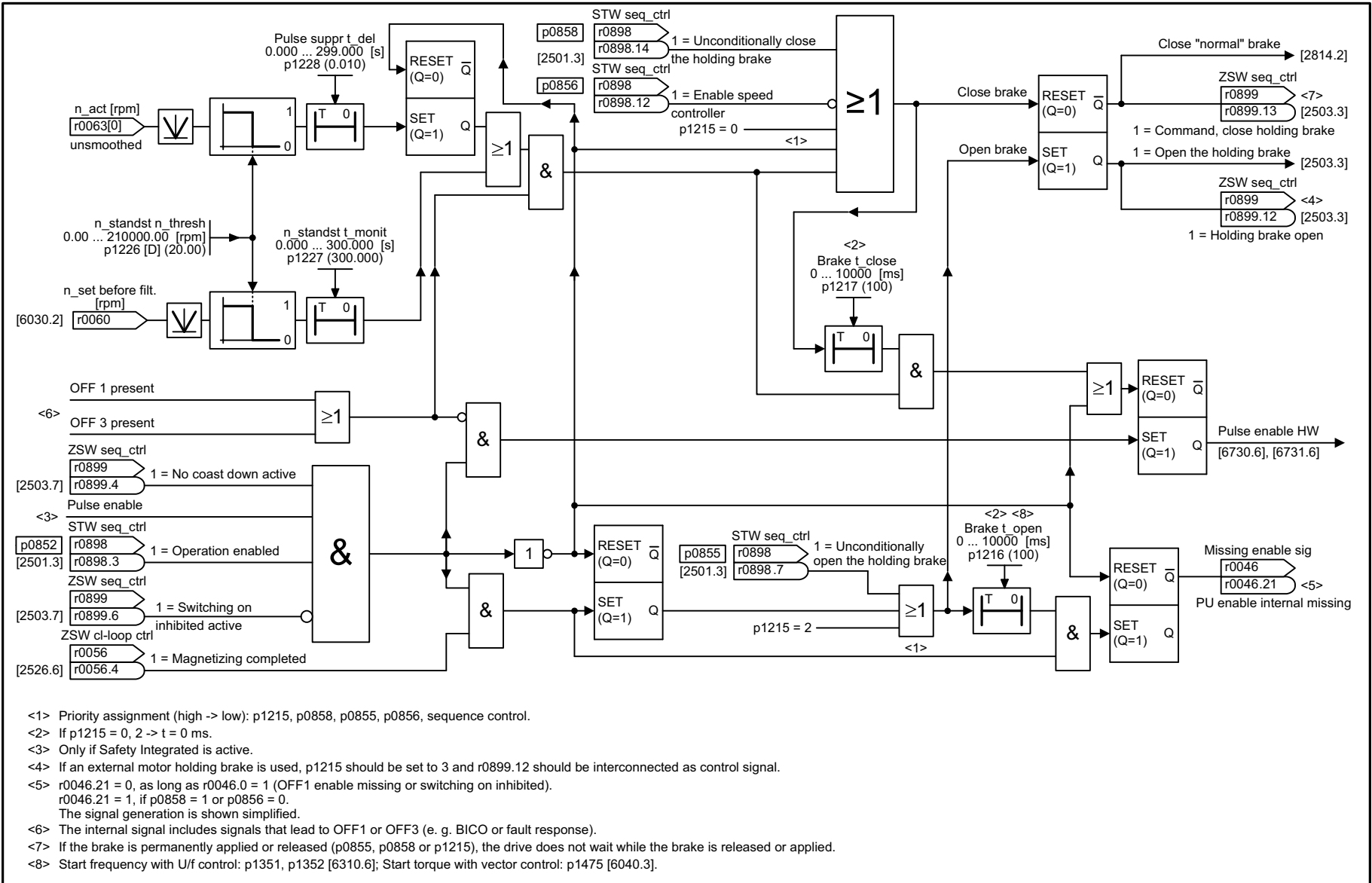


Fig. 3-59 2701 – Basic brake control

1	2	3	4	5	6	7	8
Brake Control					fp_2701_97_57.vsd	Function diagram	
Basic brake control					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 2701 -</b>

## 3.9 Safety Integrated Basic Functions

### Function diagrams

2800 – Parameter manager	582
2802 – Monitoring functions and faults/alarms	583
2804 – Status words	584
2810 – STO (Safe Torque Off)	585
2812 – F-DI (Fail-safe Digital Input)	586

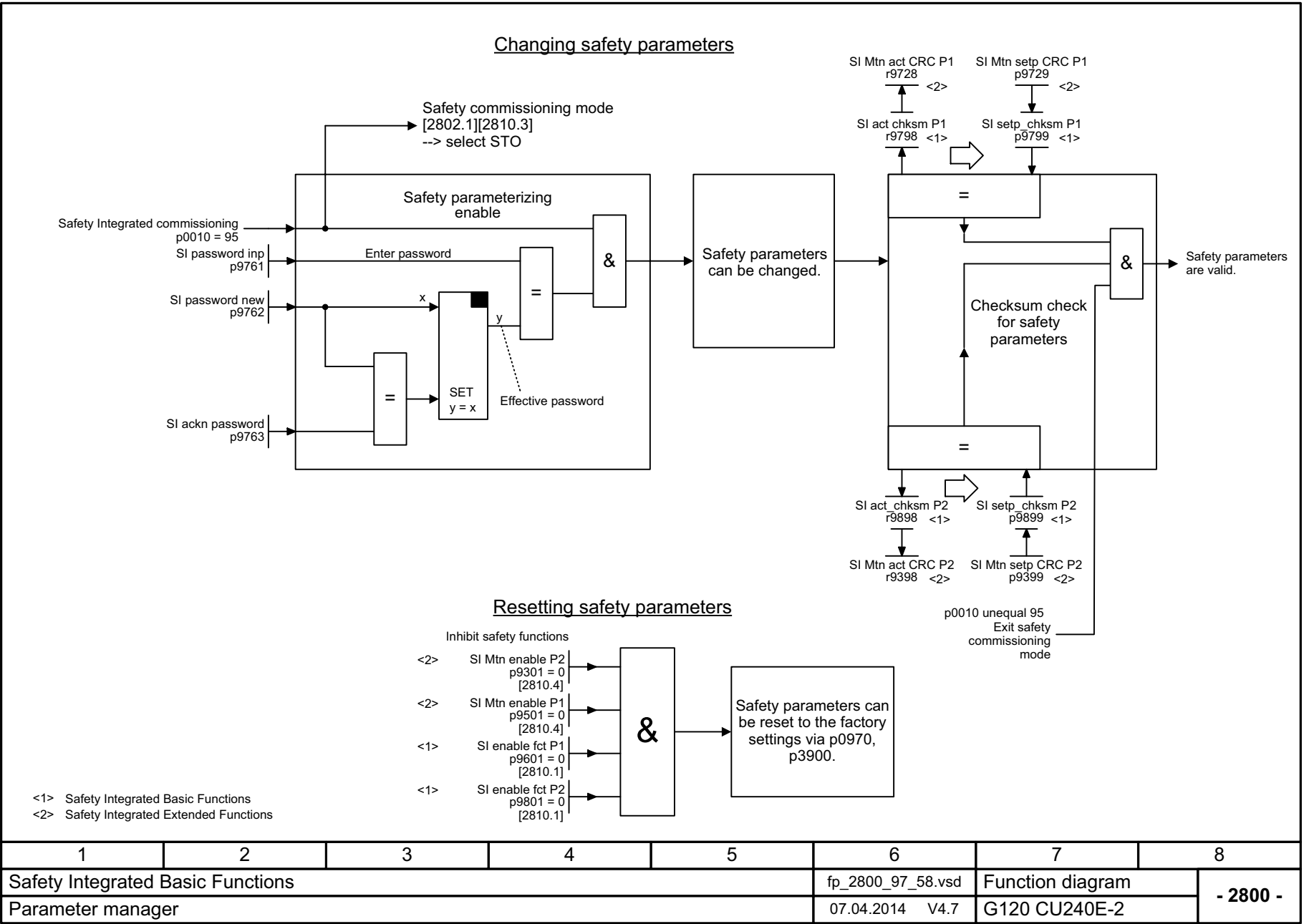
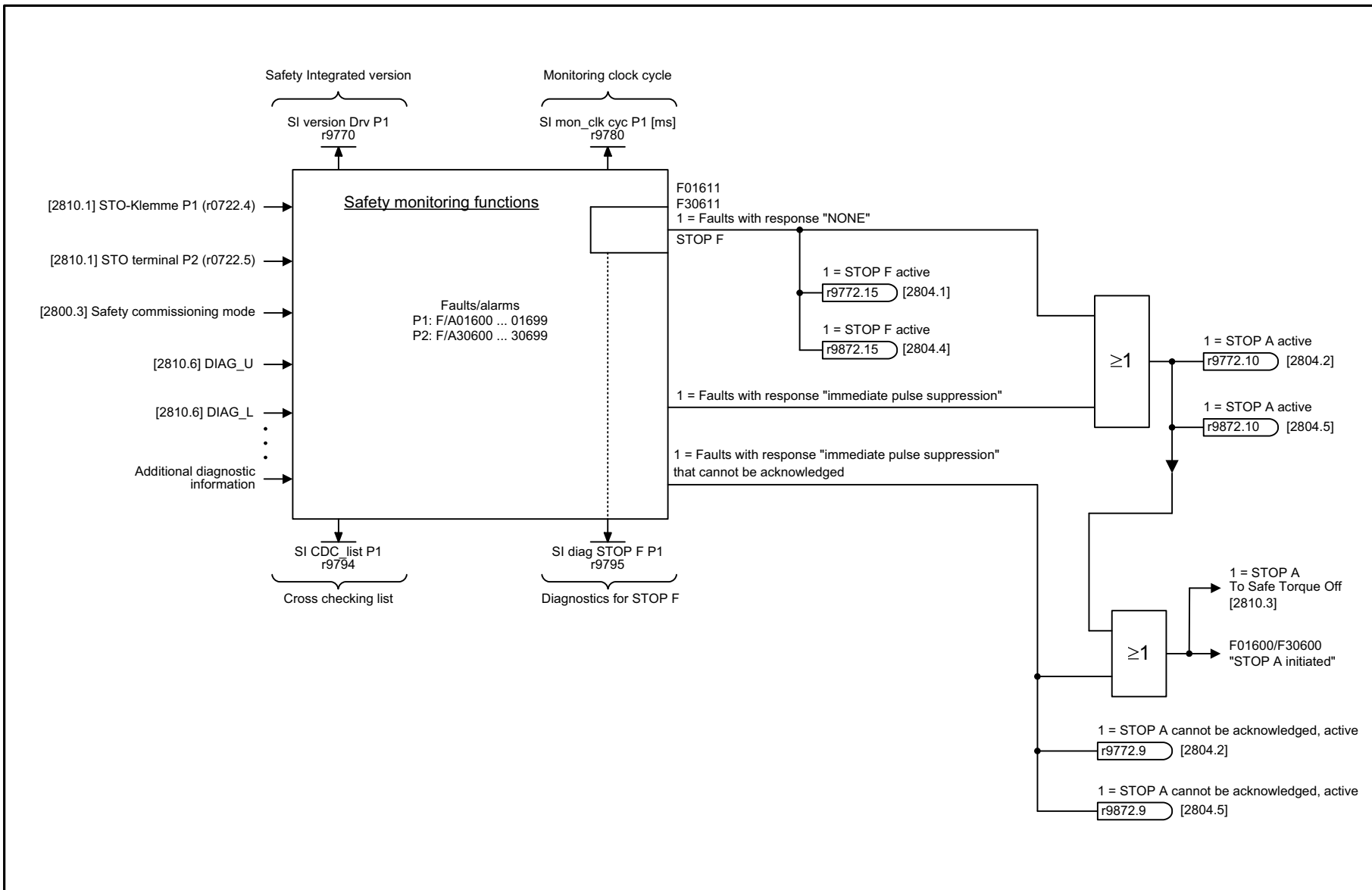


Fig. 3-60 2800 – Parameter manager



1	2	3	4	5	6	7	8
Safety Integrated Basic Functions					fp_2802_97_69.vsd	Function diagram	
Monitoring functions and faults/alarms					07.04.2014 V4.7	G120 CU240E-2	
							- 2802 -

Fig. 3-61 2802 – Monitoring functions and faults/alarms

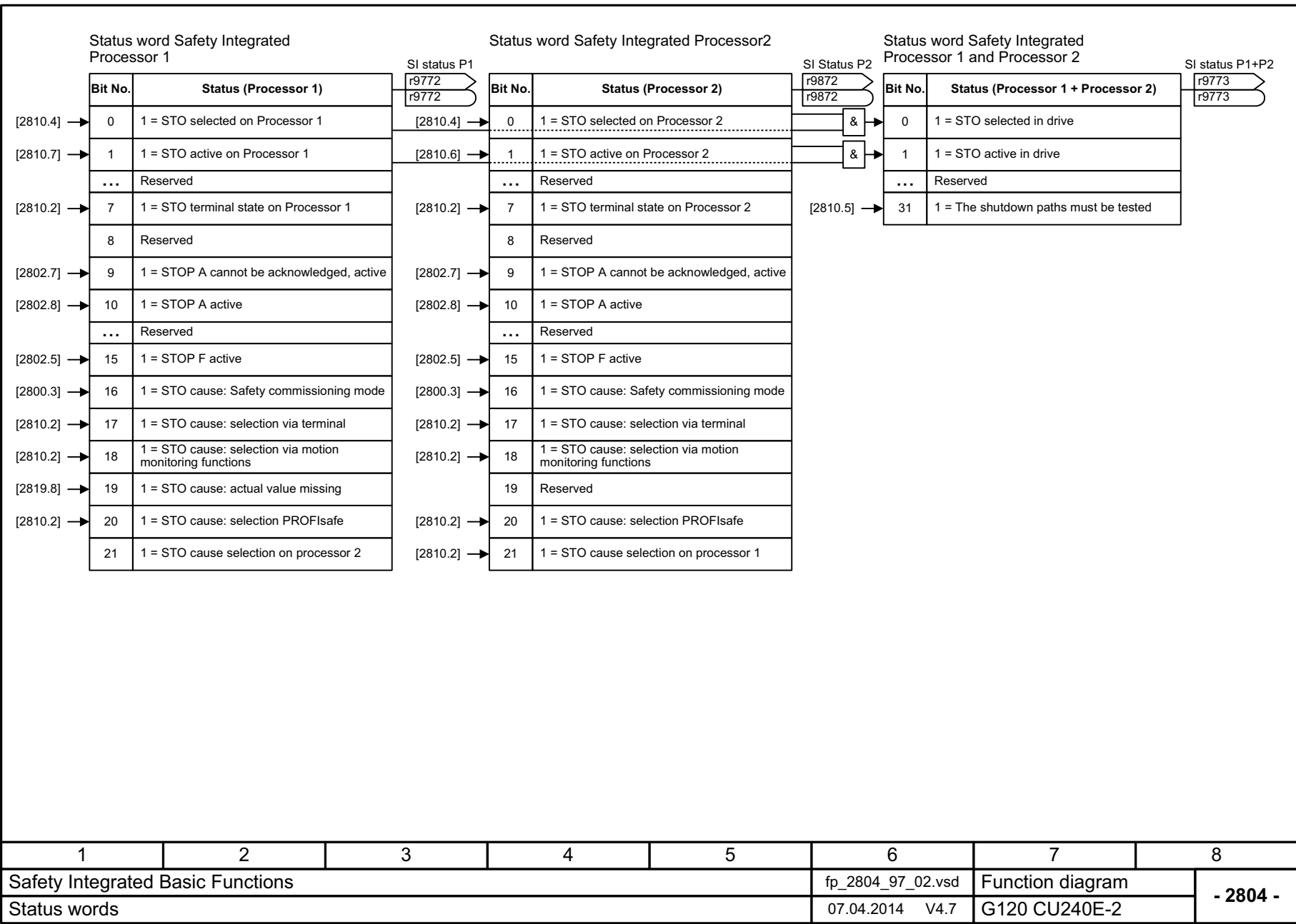
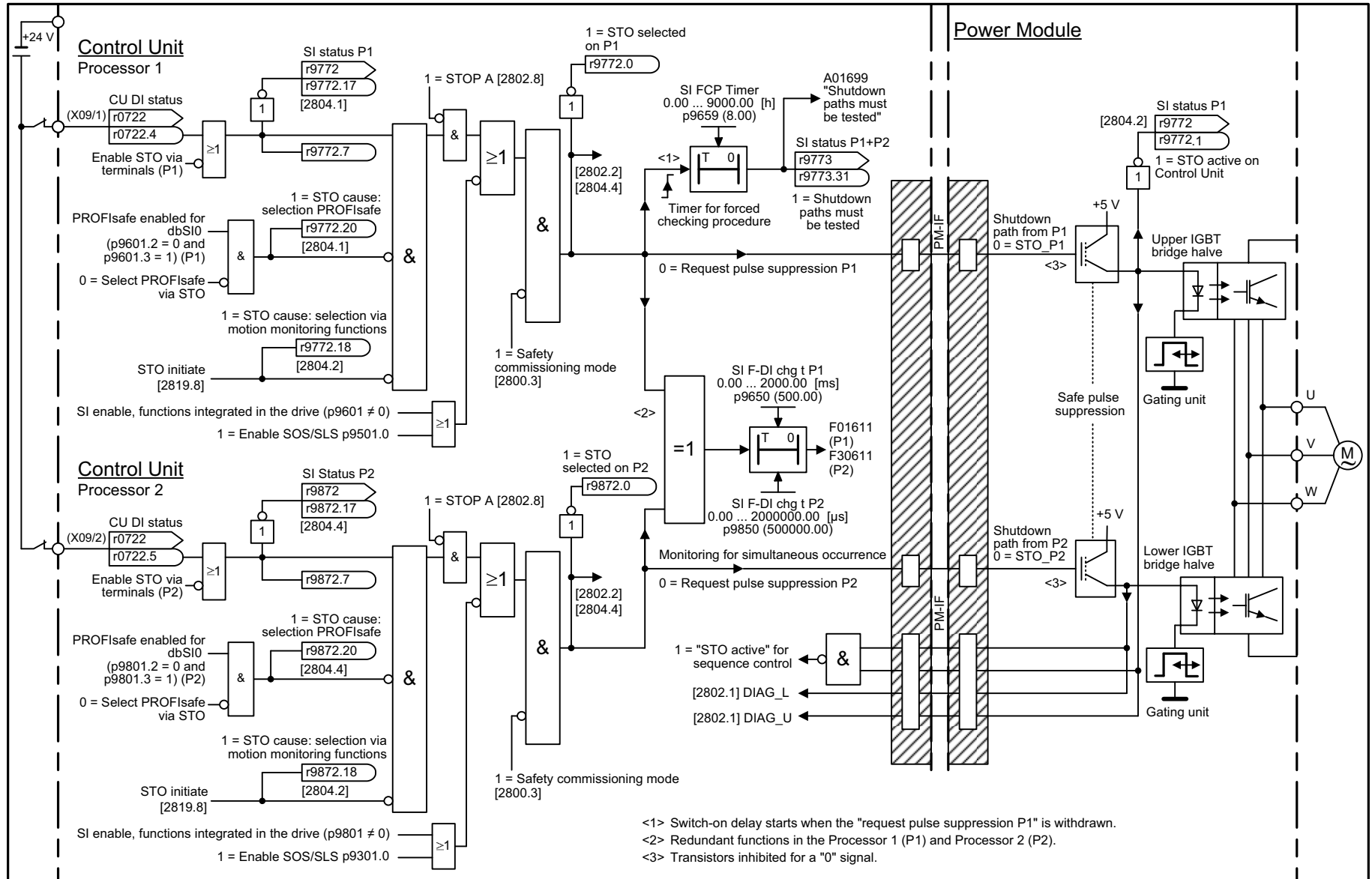


Fig. 3-62 2804 – Status words

1	2	3	4	5	6	7	8
Safety Integrated Basic Functions					fp_2804_97_02.vsd	Function diagram	
Status words					07.04.2014 V4.7	G120 CU240E-2	
							- 2804 -



Fig. 3-63 2810 – STO (Safe Torque Off)



<1> Switch-on delay starts when the "request pulse suppression P1" is withdrawn.  
 <2> Redundant functions in the Processor 1 (P1) and Processor 2 (P2).  
 <3> Transistors inhibited for a "0" signal.

1	2	3	4	5	6	7	8
Safety Integrated Basic Functions					fp_2810_97_02.vsd	Function diagram	
STO (Safe Torque Off)					07.04.2014 V4.7	CU240E-2/E-2 DP	
							- 2810 -

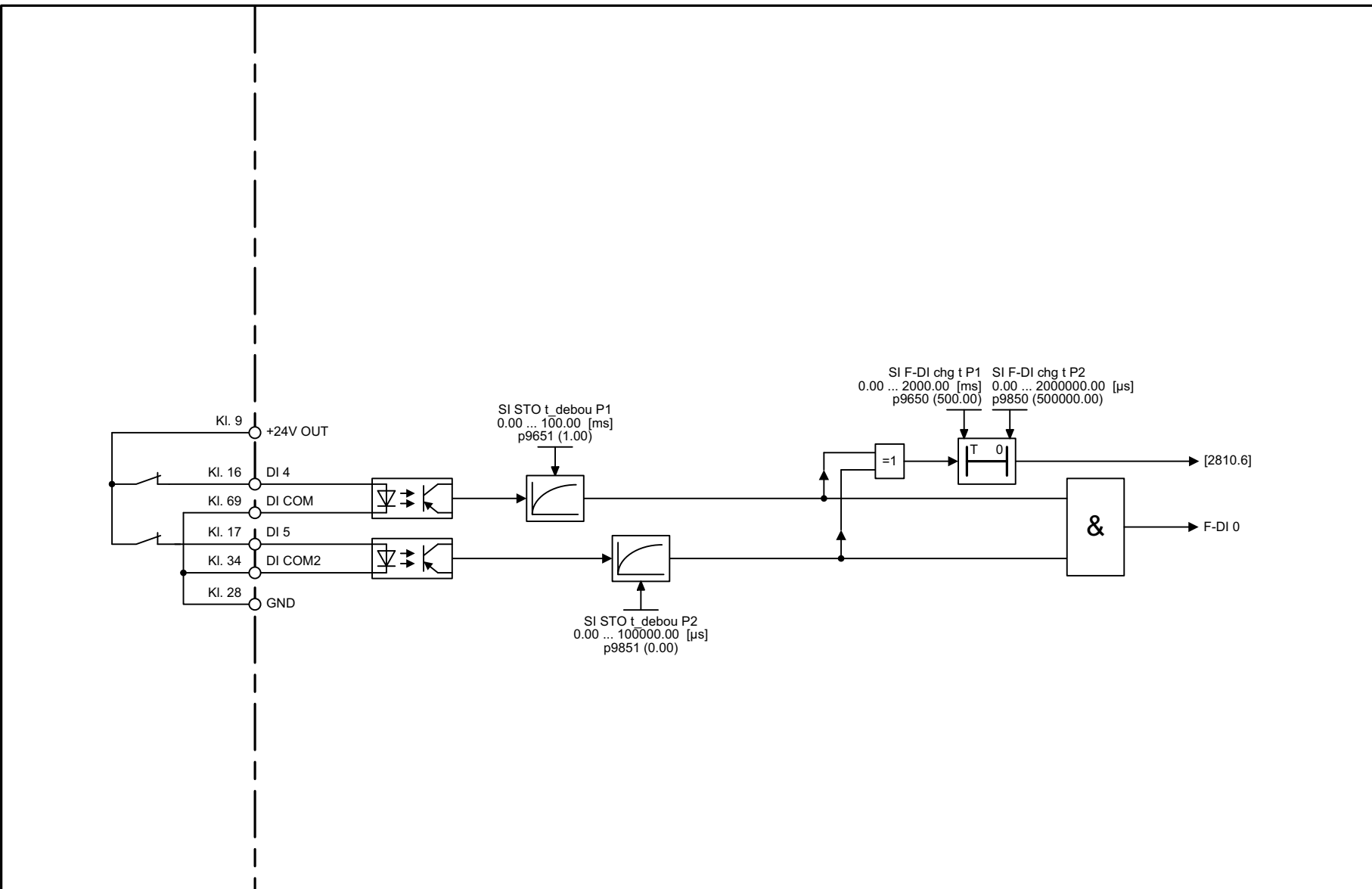


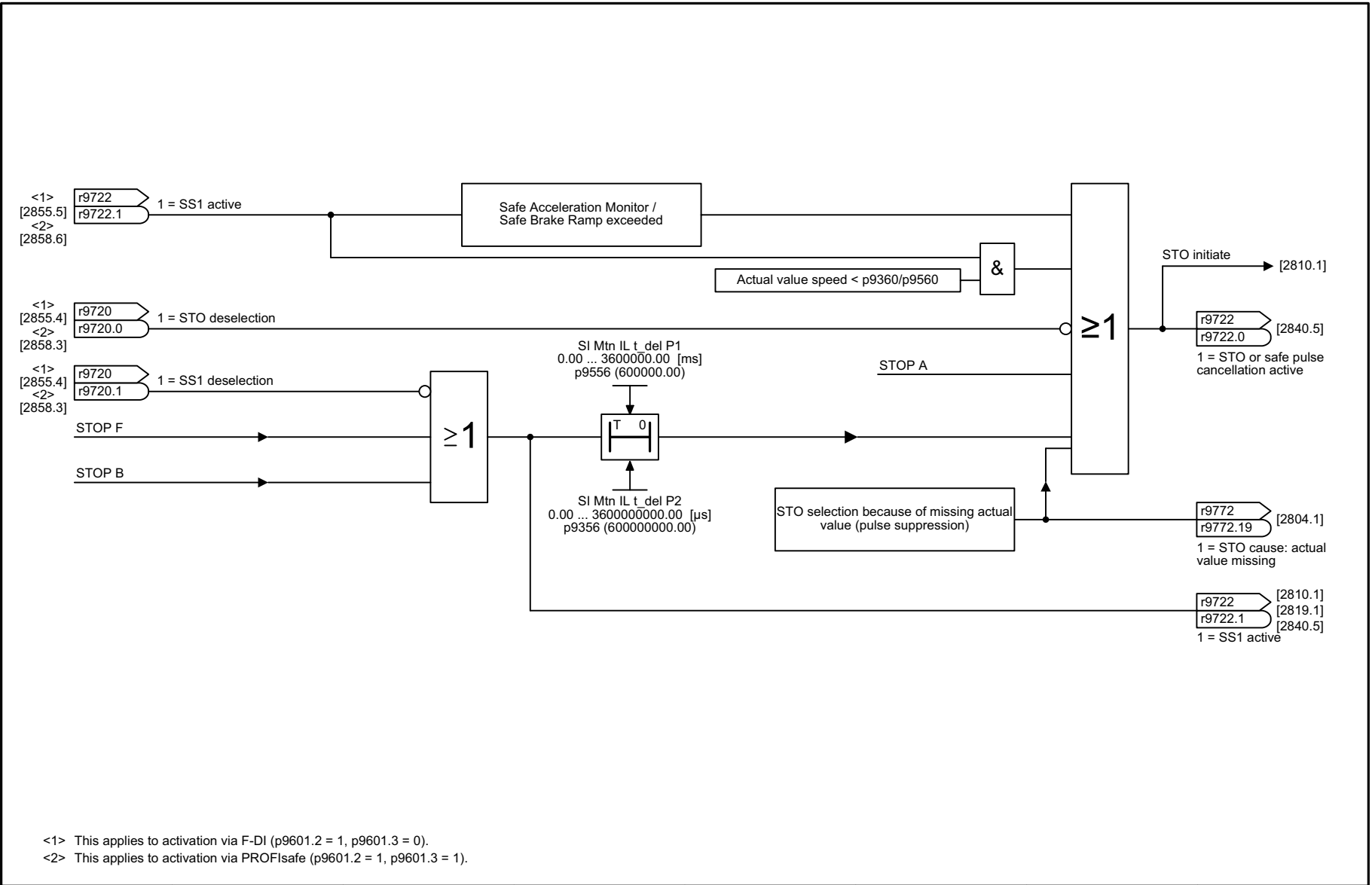
Fig. 3-64 2812 – F-DI (Fail-safe Digital Input)

1	2	3	4	5	6	7	8
Safety Integrated Basic Functions					fp_2812_97_66.vsd	Function diagram	
F-DI (Fail-safe Digital Input)					07.04.2014 V4.7	CU240E-2/E-2 DP	
<b>- 2812 -</b>							

## 3.10 Safety Integrated Extended Functions

### Function diagrams

2819 – SS1 (Safe Stop 1), internal STOP A, B, F	588
2820 – SLS (Safely-Limited Speed)	589
2823 – SSM (Safe Speed Monitor)	590
2824 – SDI (Safe Direction)	591
2840 – Control and status word	592
2850 – Fail-safe digital inputs (F-DI 0 ... F-DI 2)	593
2855 – Extended Functions via F-DI (p9601.2 = 1 and p9601.3 = 0)	594
2858 – Extended Functions via PROFIsafe (9601.2 = 1 and 9601.3 = 1)	595

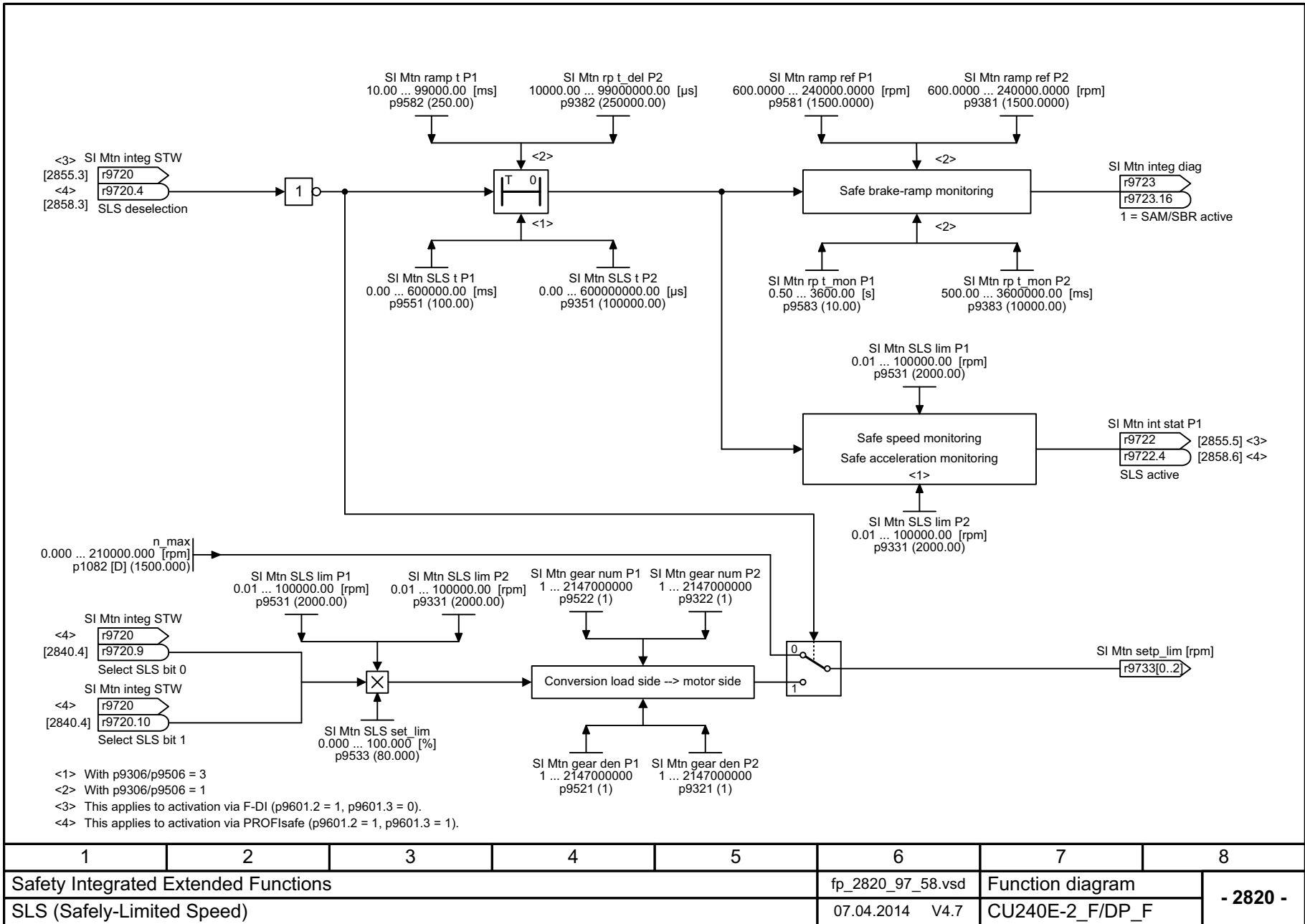


<1> This applies to activation via F-DI (p9601.2 = 1, p9601.3 = 0).  
 <2> This applies to activation via PROFIsafe (p9601.2 = 1, p9601.3 = 1).

1	2	3	4	5	6	7	8
Safety Integrated Extended Functions					fp_2819_97_58.vsd	Function diagram	
SS1 (Safe Stop 1), internal STOP A, B, F					07.04.2014 V4.7	CU240E-2_F/DP_F	
							<b>- 2819 -</b>

Fig. 3-65 2819 – SS1 (Safe Stop 1), internal STOP A, B, F

Fig. 3-66 2820 – SLS (Safely-Limited Speed)



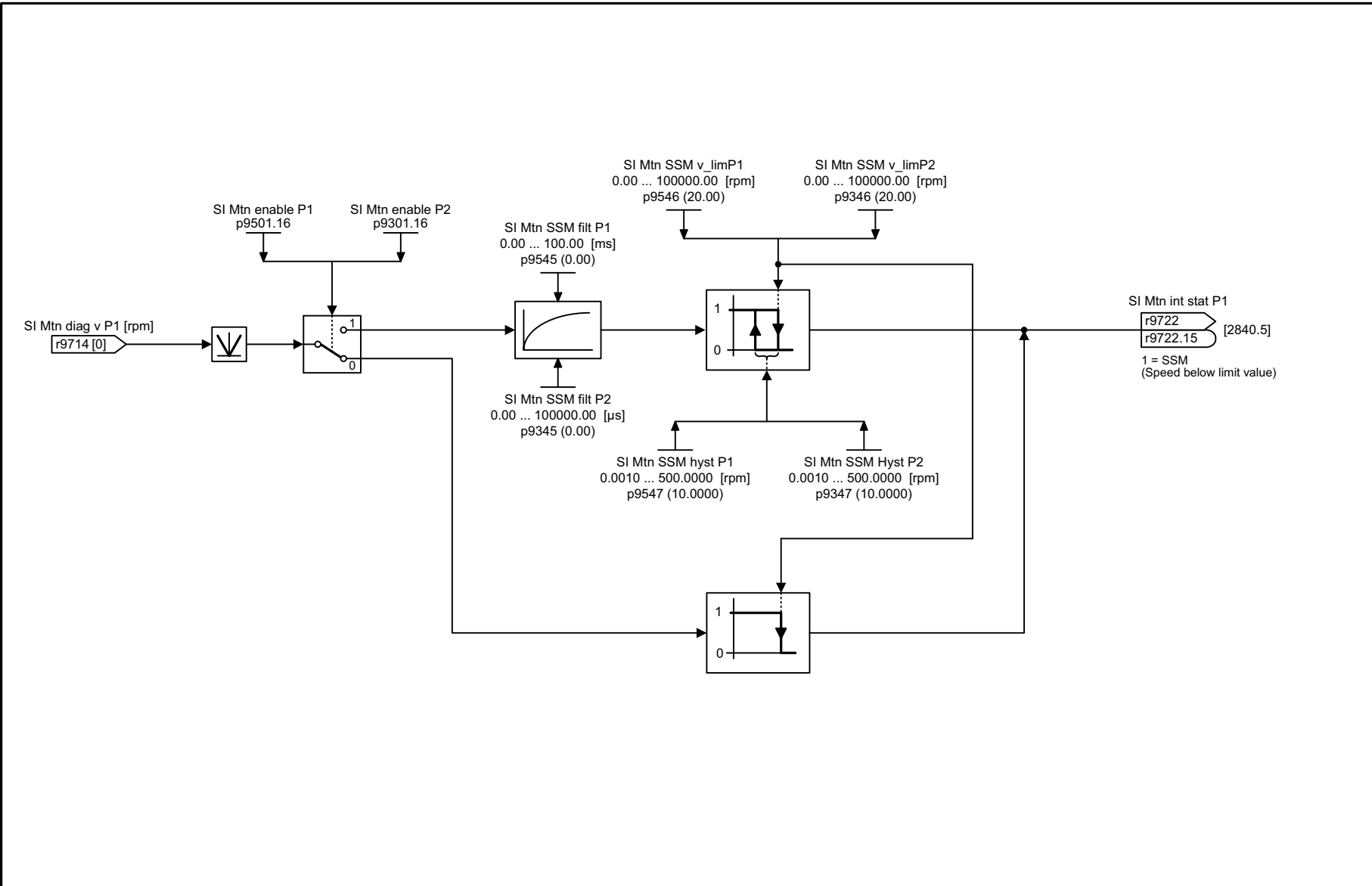


Fig. 3-67 2823 – SSM (Safe Speed Monitor)

1	2	3	4	5	6	7	8
Safety Integrated Extended Functions					fp_2823_97_58.vsd	Function diagram	
SSM (Safe Speed Monitor)					07.04.2014 V4.7	CU240E-2 DP_F/PN_F	

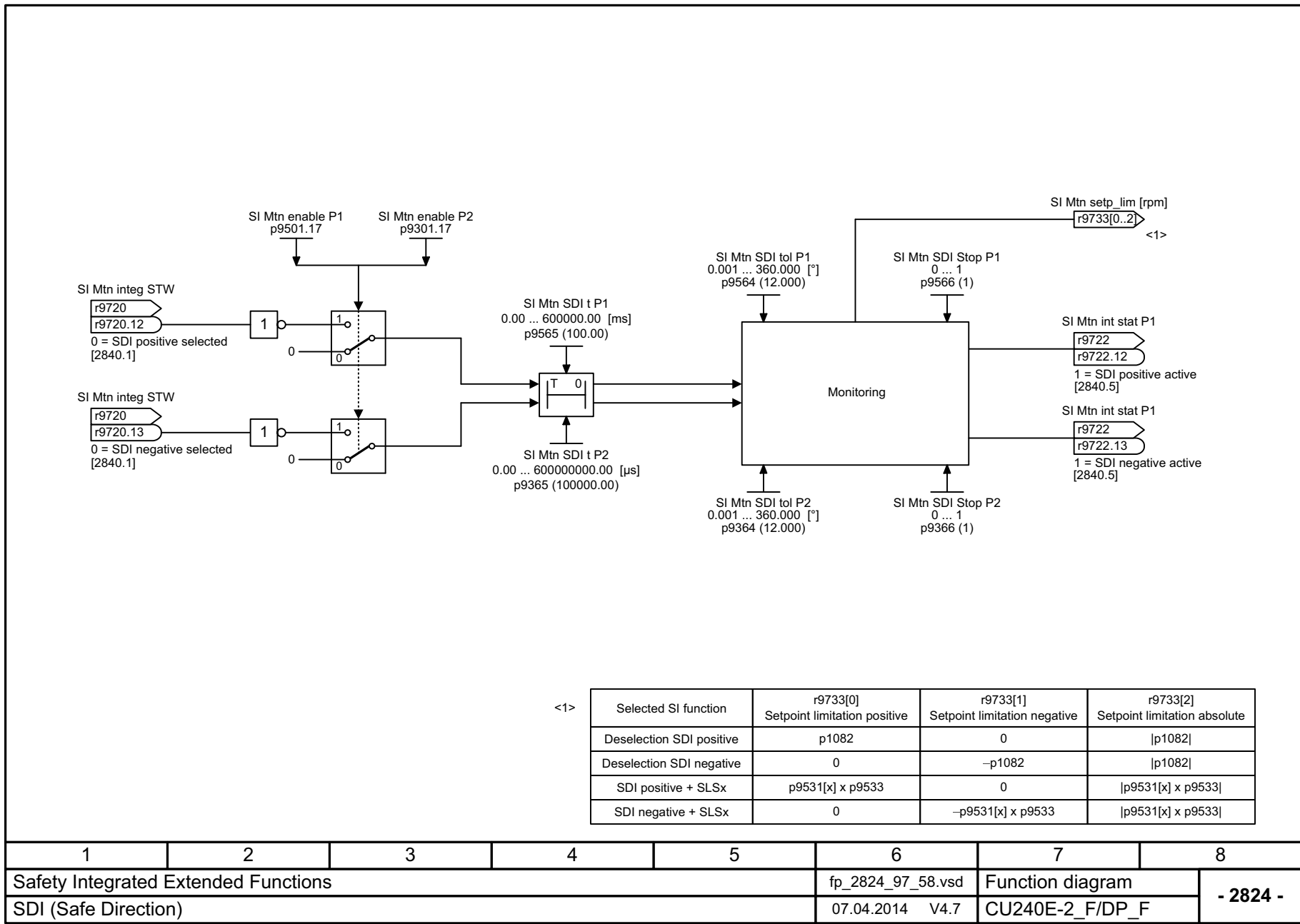


Fig. 3-68 2824 – SDI (Safe Direction)

SINAMICS G120 Control Units CU240B-2/CU240E-2  
List Manual (LH11), 04/2014, A5E33839529B AA

1	2	3	4	5	6	7	8
Safety Integrated Extended Functions					fp_2824_97_58.vsd	Function diagram	
SDI (Safe Direction)					07.04.2014 V4.7	CU240E-2_F/DP_F	
							<b>- 2824 -</b>

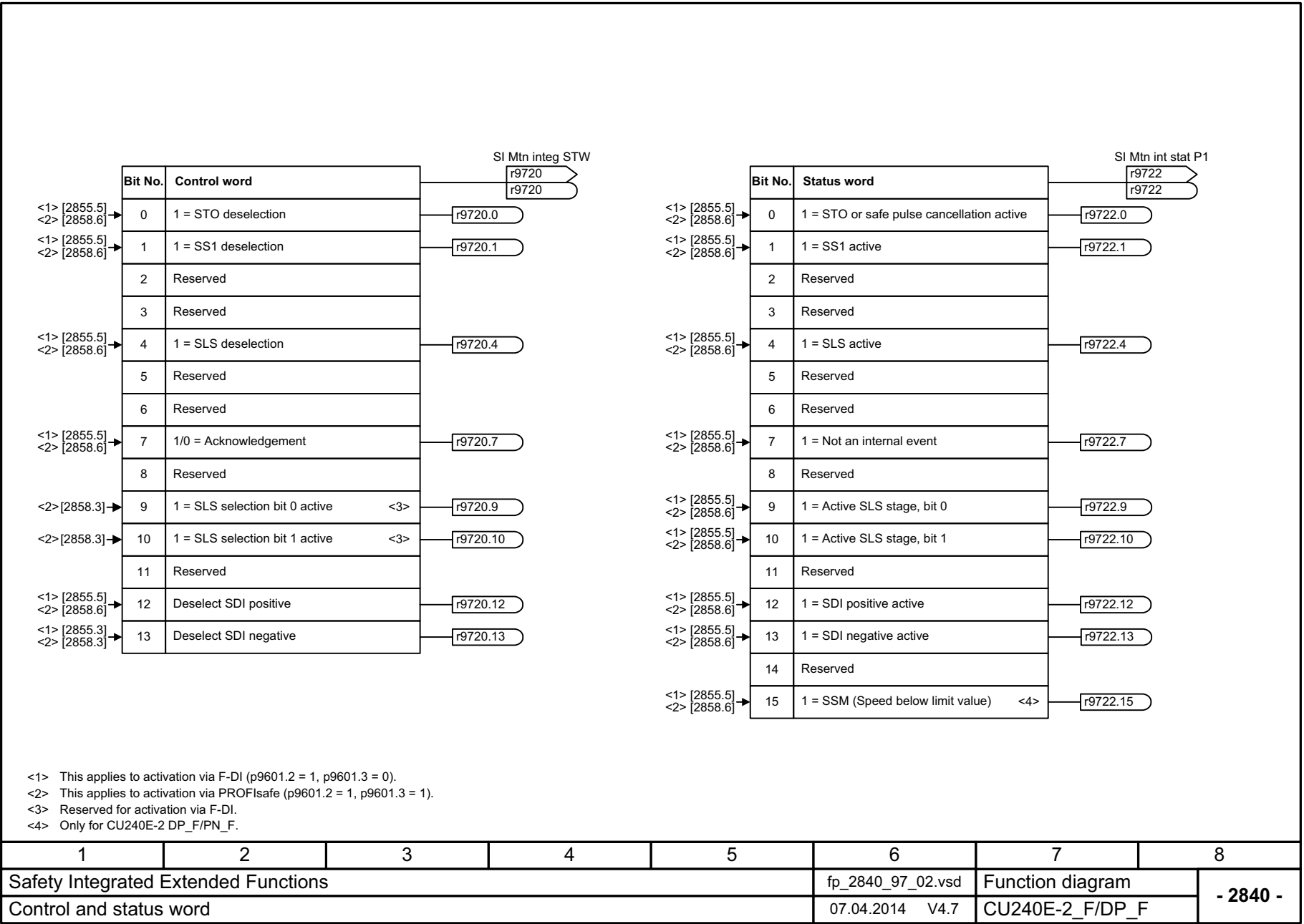


Fig. 3-69 2840 – Control and status word



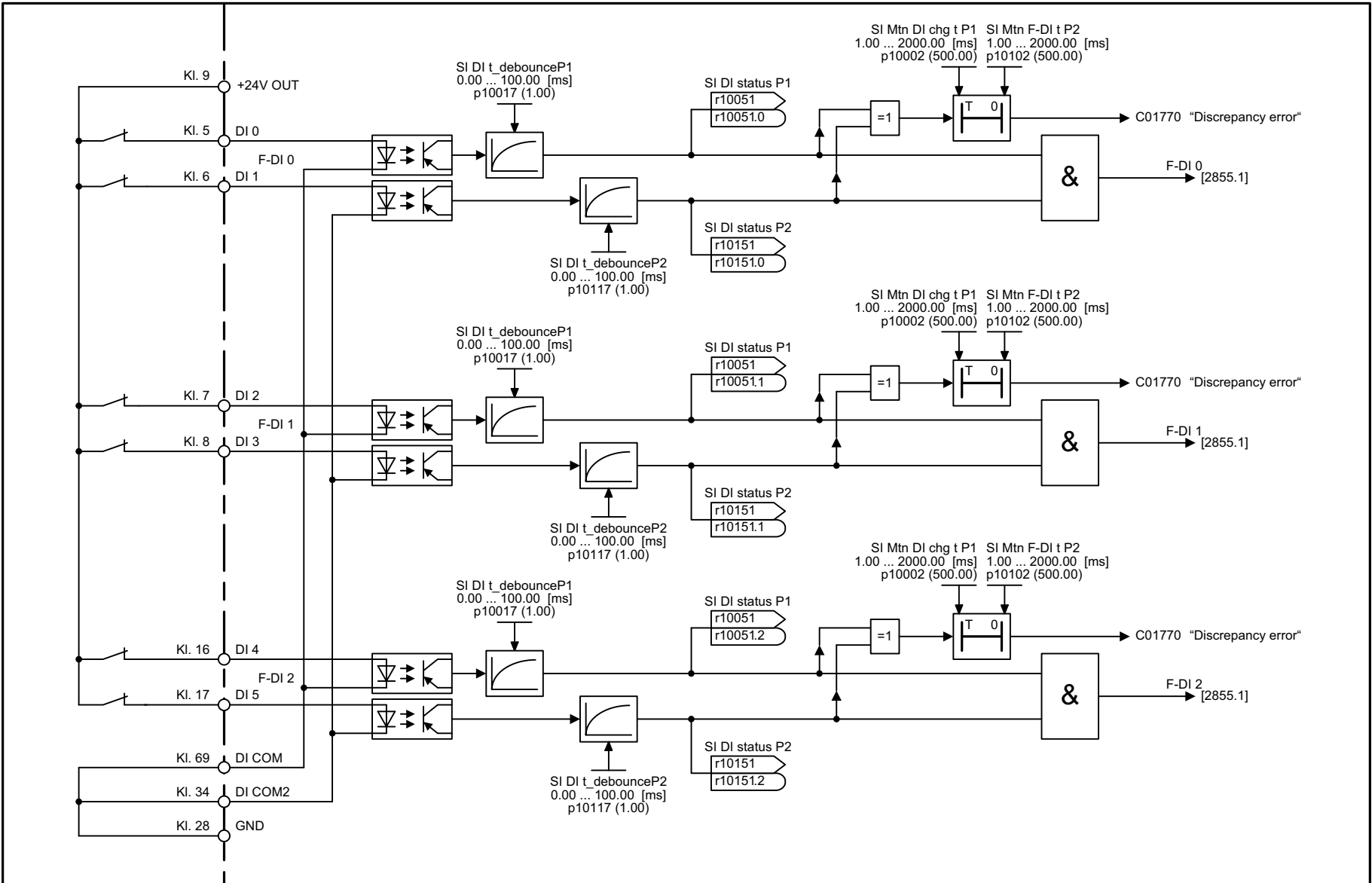


Fig. 3-70 2850 – Fail-safe digital inputs (F-DI 0 ... F-DI 2)

1	2	3	4	5	6	7	8
Safety Integrated Extended Functions					fp_2850_97_02.vsd	Function diagram	
Fail-safe digital inputs (F-DI 0 ... F-DI 2)					07.04.2014 V4.7	CU240E-2_F/DP_F	
							- 2850 -

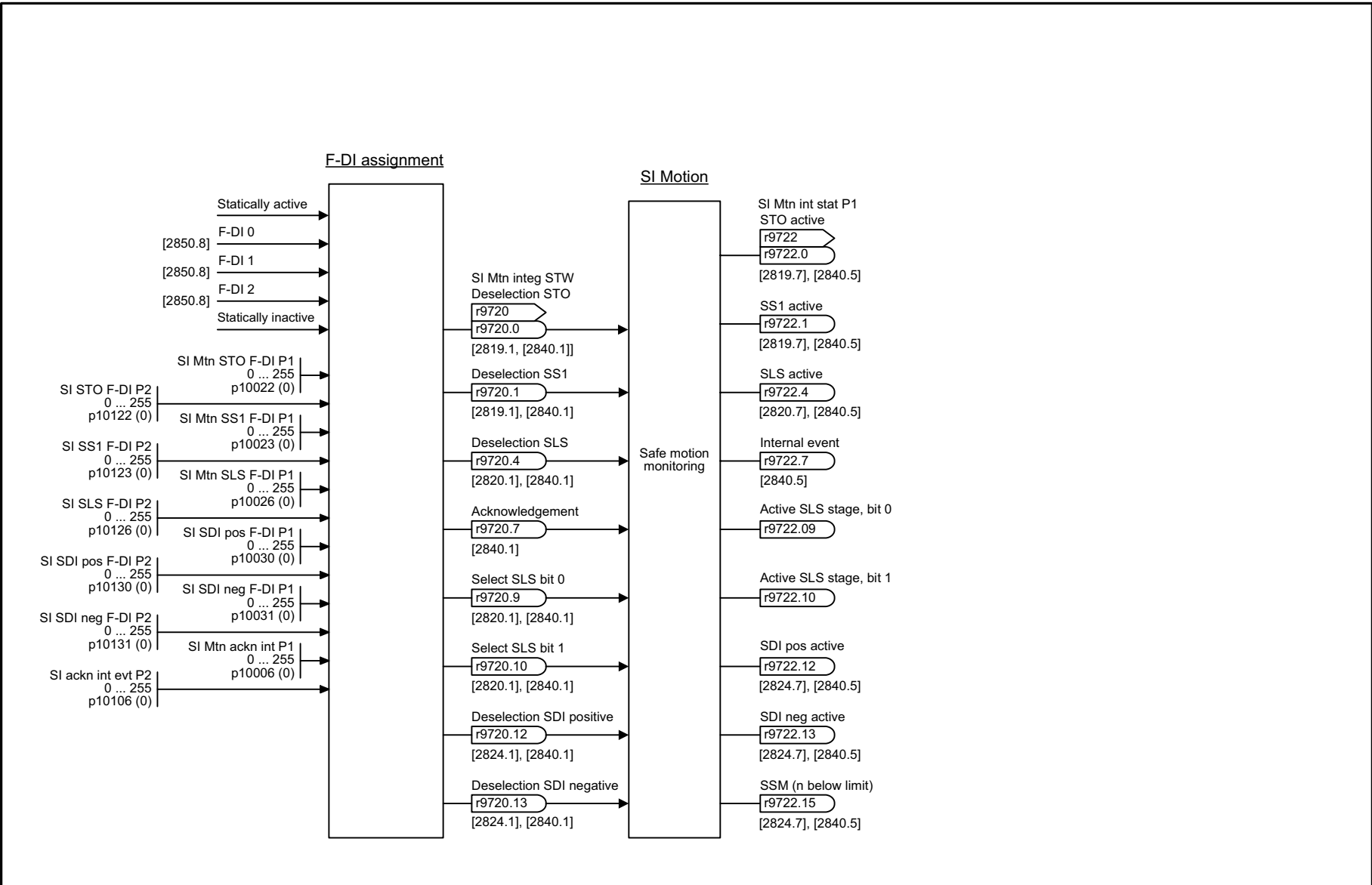


Fig. 3-71 2855 – Extended Functions via F-DI (p9601.2 = 1 and p9601.3 = 0)

1	2	3	4	5	6	7	8
Safety Integrated Extended Functions					fp_2855_97_02.vsd	Function diagram	
Extended Functions via F-DI (p9601.2 = 1 and p9601.3 = 0)					07.04.2014 V4.7	CU240E-2_F/DP_F	

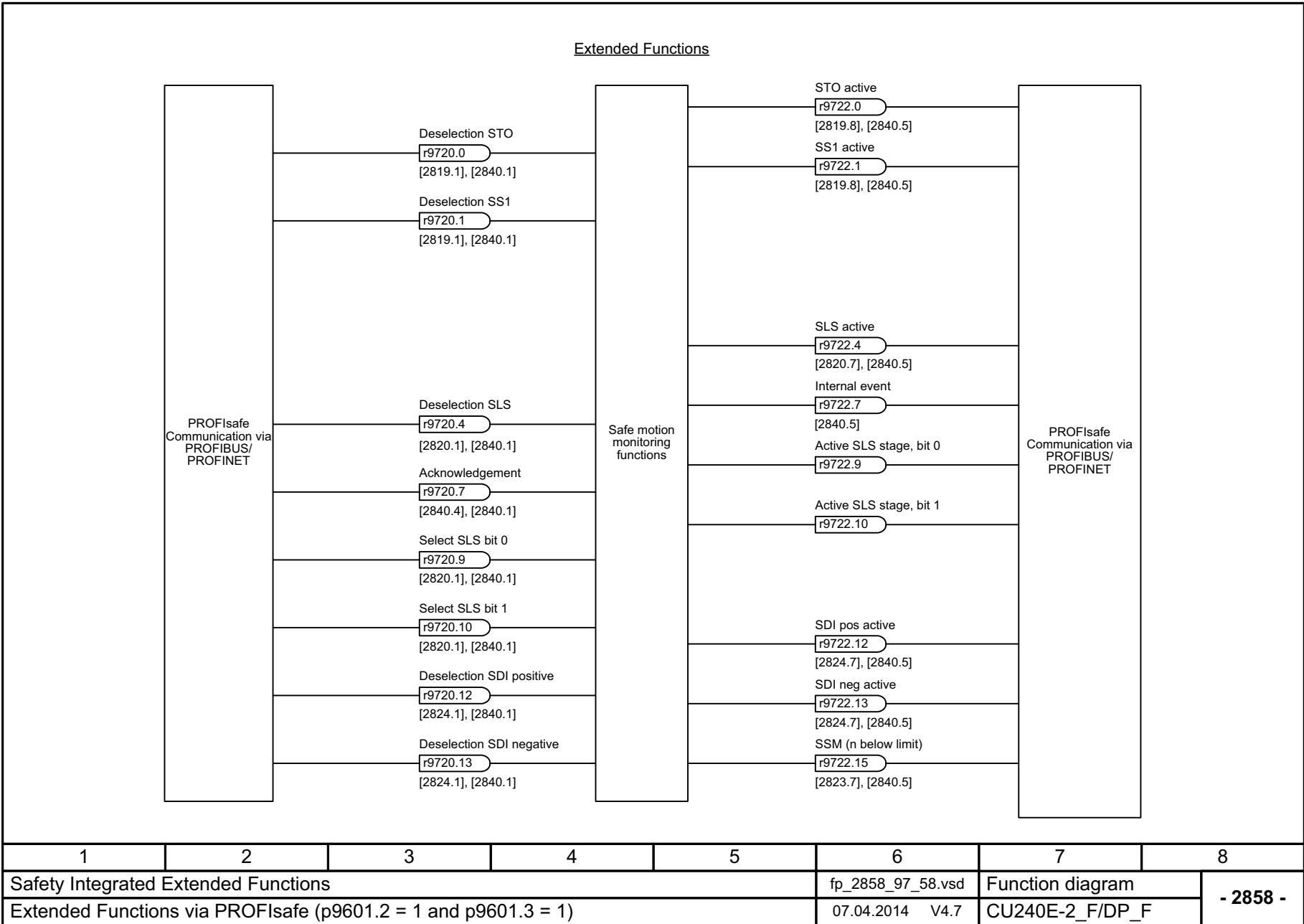


Fig. 3-72 2858 – Extended Functions via PROFIsafe (9601.2 = 1 and 9601.3 = 1)

## 3.11 Safety Integrated PROFIsafe

### Function diagrams

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2915 – Standard telegrams	597
2917 – Manufacturer-specific telegrams	598

---

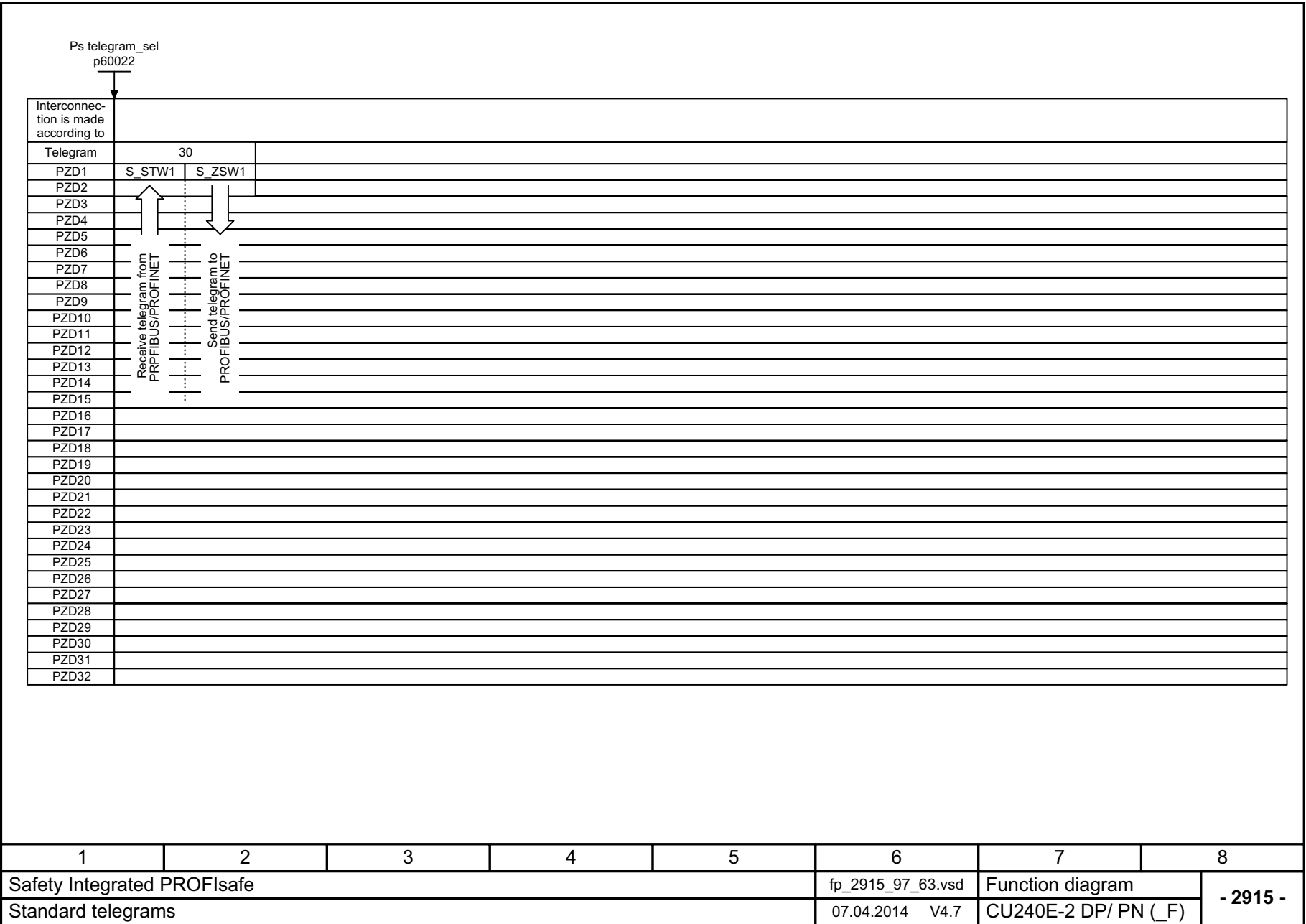


Fig. 3-73 2915 – Standard telegrams

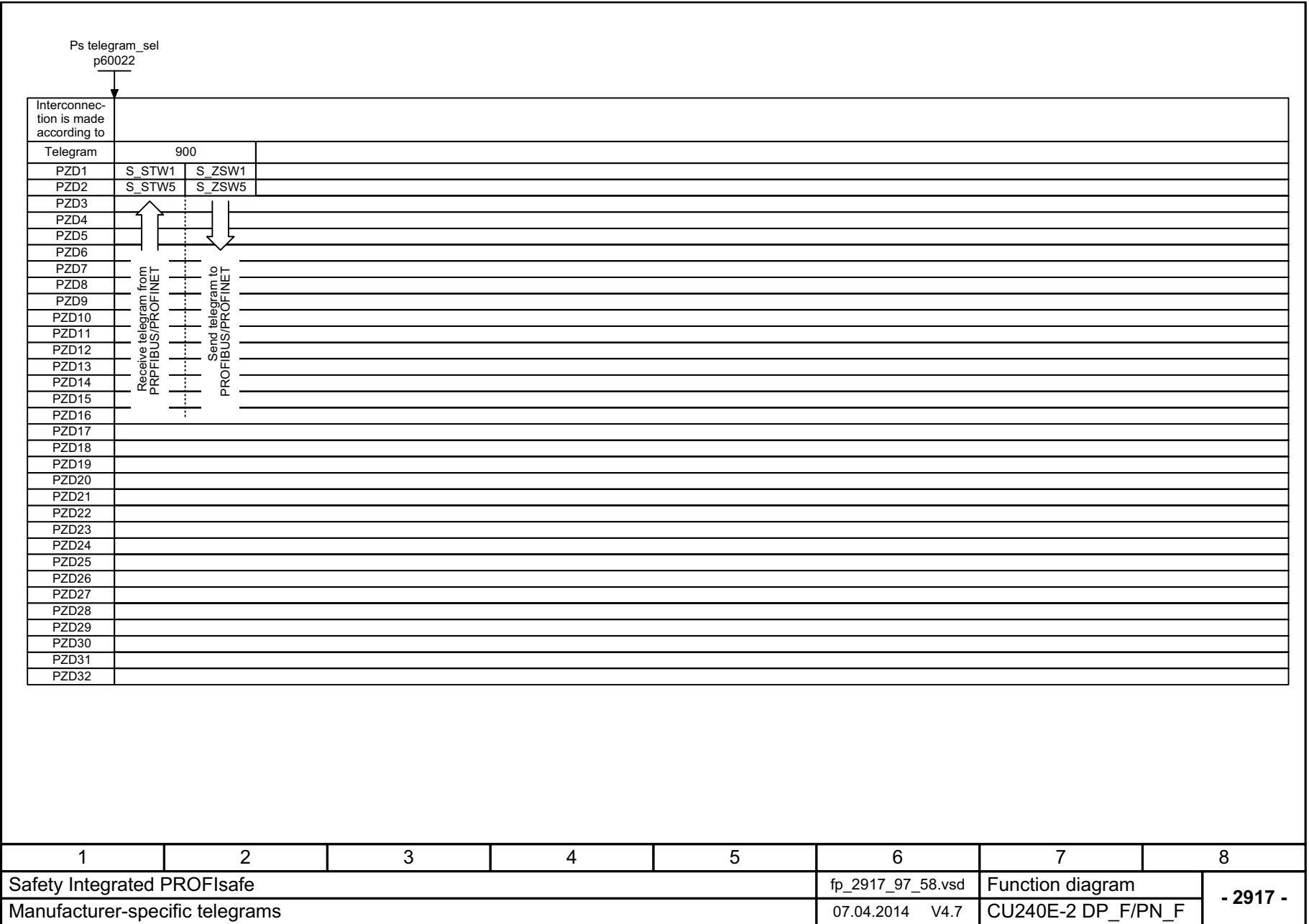


Fig. 3-74 2917 – Manufacturer-specific telegrams

## 3.12 Setpoint channel

### Function diagrams

3001 – Overview	600
3010 – Fixed speed setpoints, binary selection (p1016 = 2)	601
3011 – Fixed speed setpoints, direct selection (p1016 = 1)	602
3020 – Motorized potentiometer	603
3030 – Main/supplementary setpoint, setpoint scaling, jogging	604
3040 – Direction limitation and direction reversal	605
3050 – Skip frequency bands and speed limitations	606
3060 – Basic ramp-function generator	607
3070 – Extended ramp-function generator	608
3080 – Ramp-function generator selection, status word, tracking	609

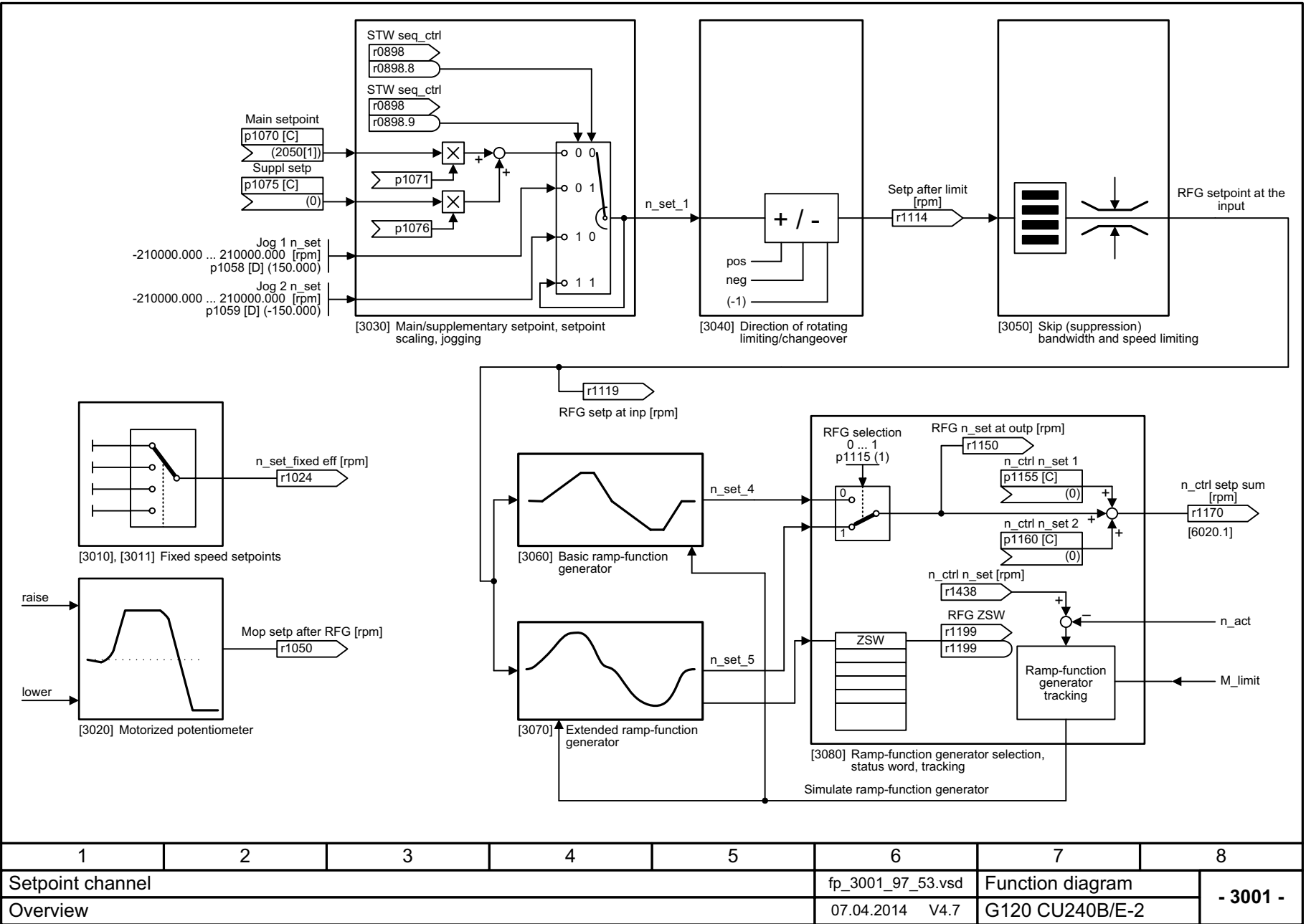
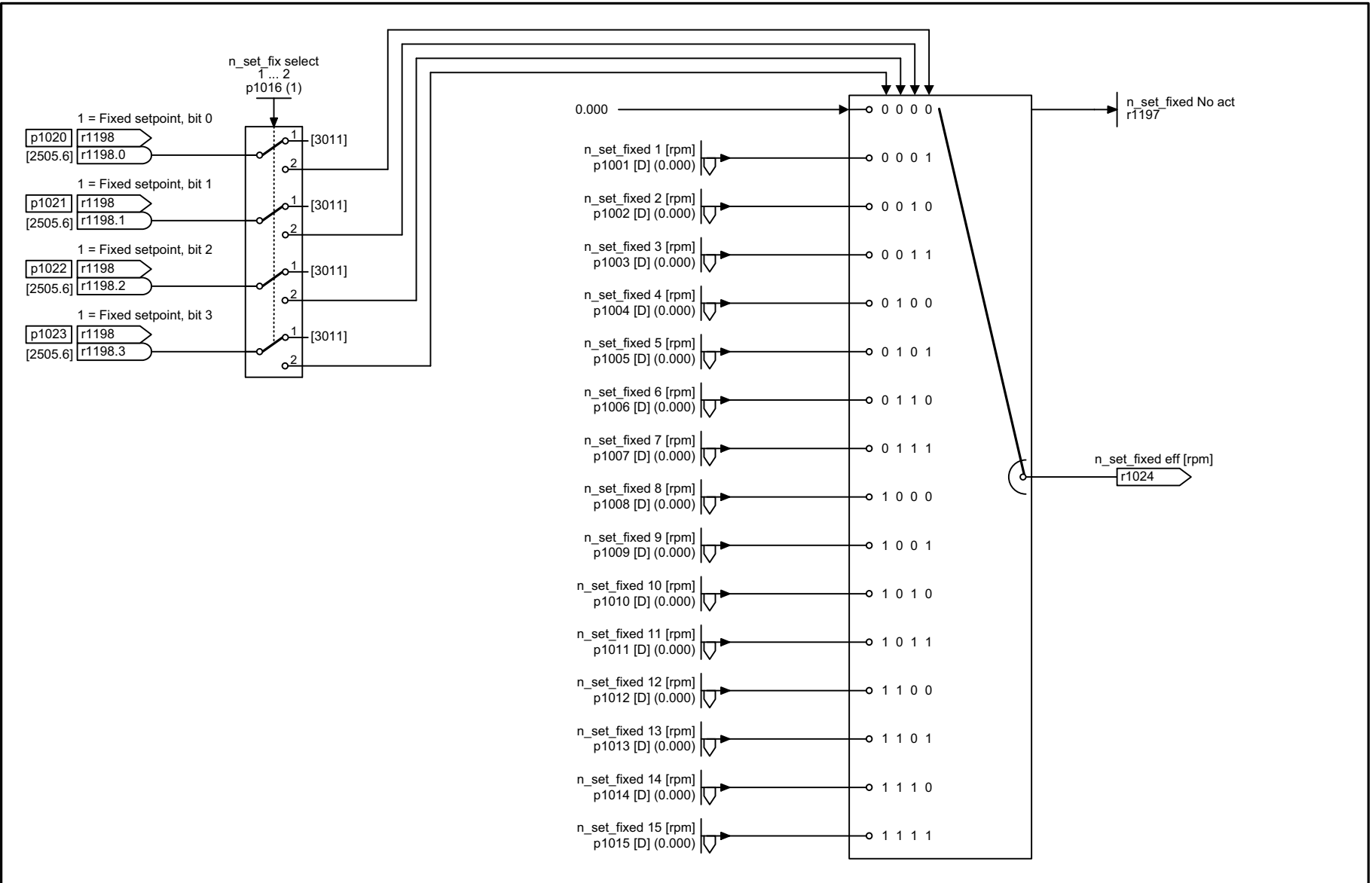


Fig. 3-75 3001 – Overview

1	2	3	4	5	6	7	8
Setpoint channel					fp_3001_97_53.vsd	Function diagram	
Overview					07.04.2014 V4.7	G120 CU240B/E-2	
<b>- 3001 -</b>							





1	2	3	4	5	6	7	8
Setpoint channel					fp_3010_97_51.vsd	Function diagram	
Fixed speed setpoints, binary selection (p1016 = 2)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 3010 -</b>

Fig. 3-76 3010 – Fixed speed setpoints, binary selection (p1016 = 2)

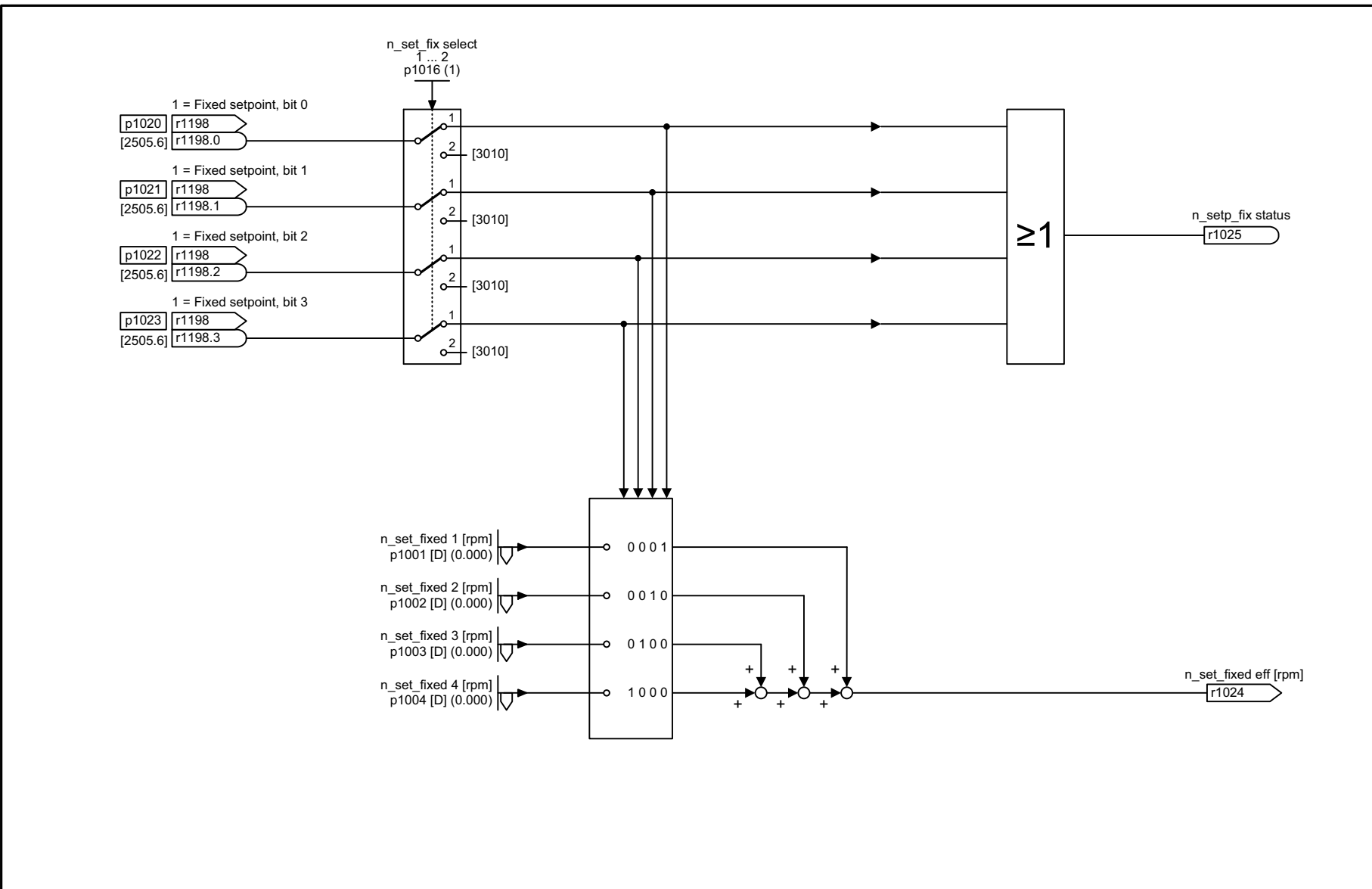
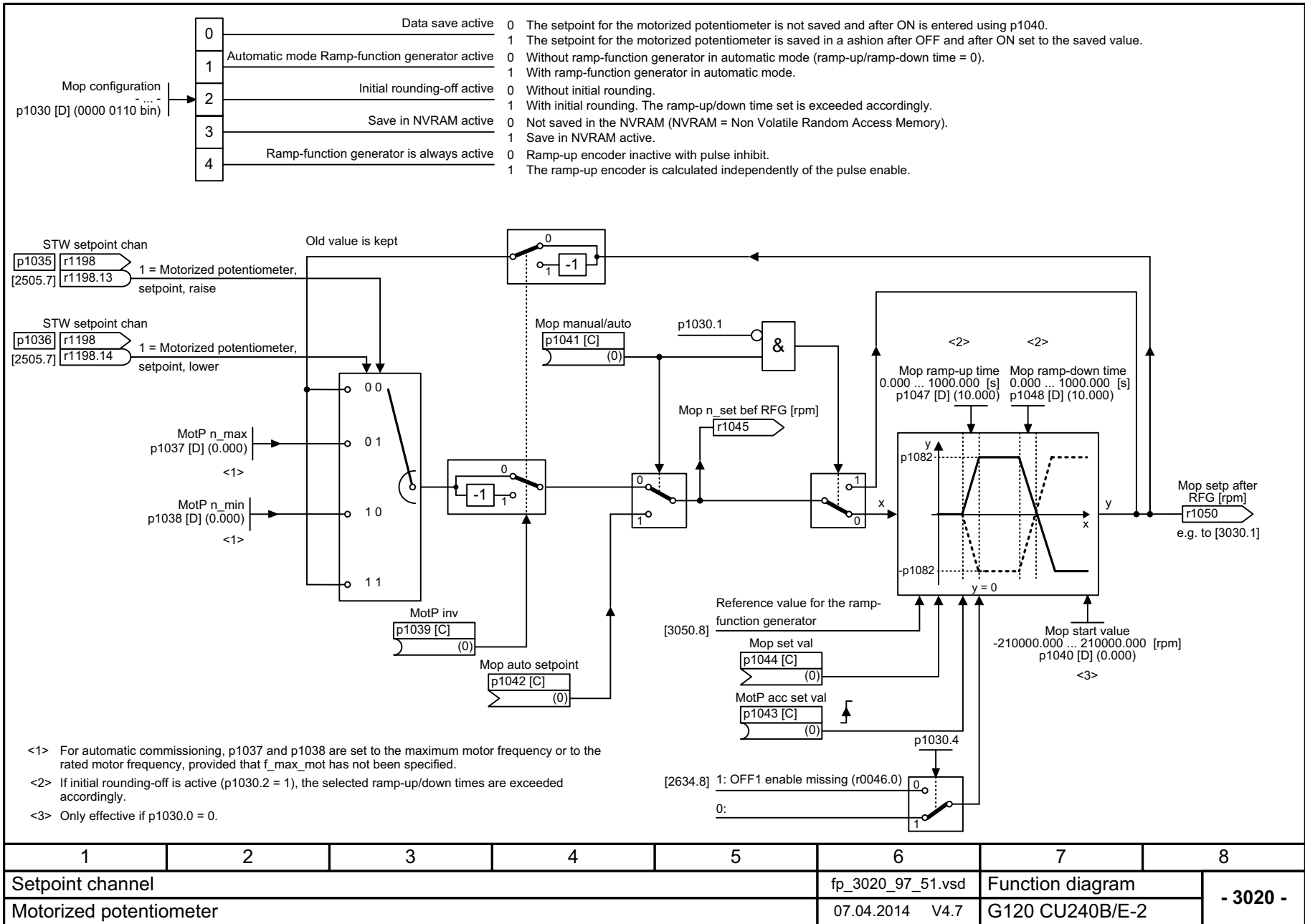
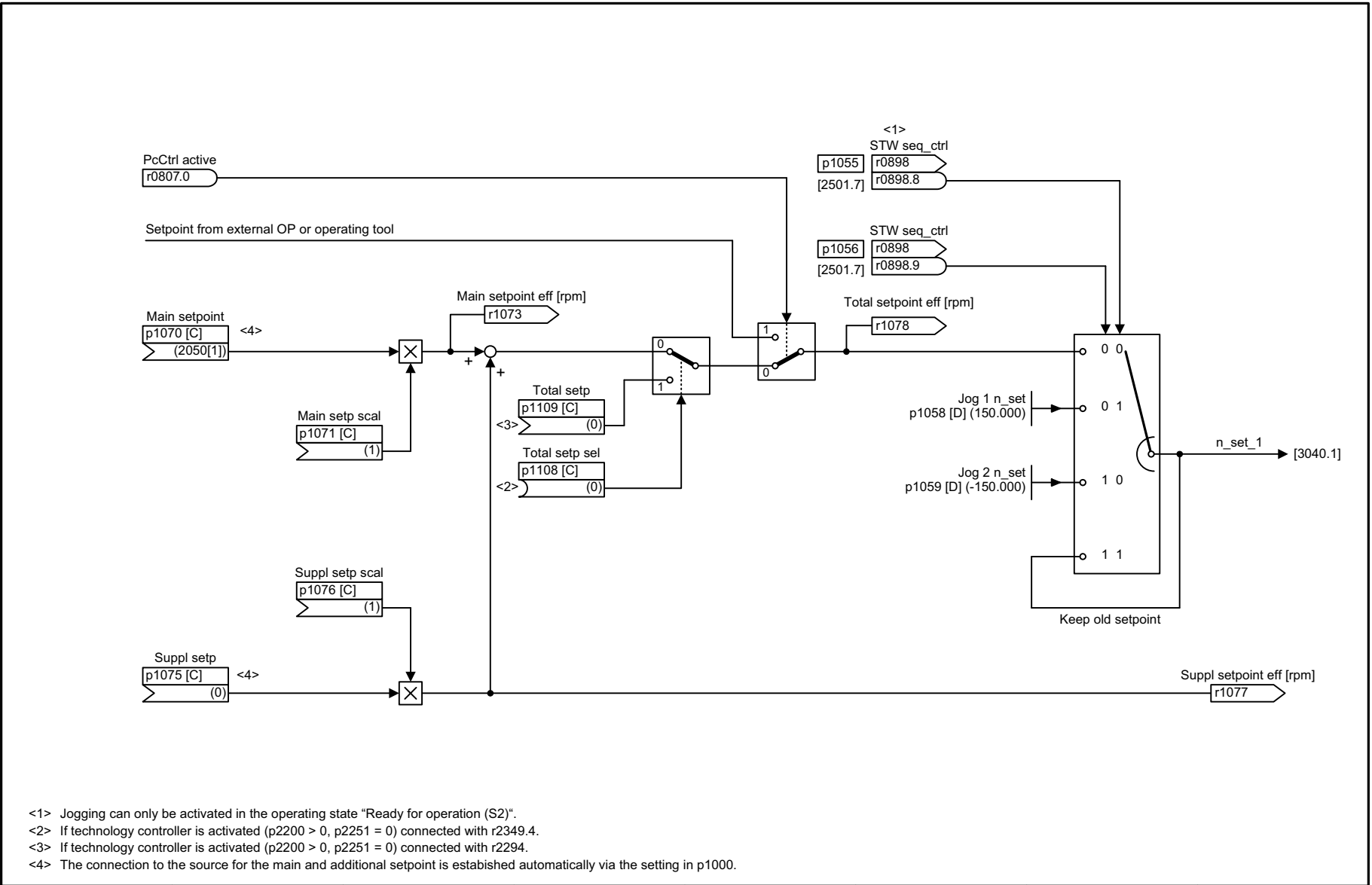


Fig. 3-77 3011 – Fixed speed setpoints, direct selection (p1016 = 1)

1	2	3	4	5	6	7	8
Setpoint channel					fp_3011_97_51.vsd	Function diagram	
Fixed speed setpoints, direct selection (p1016 = 1)					07.04.2014 V4.7	G120 CU240B/E-2	
							- 3011 -

Fig. 3-78 3020 – Motorized potentiometer

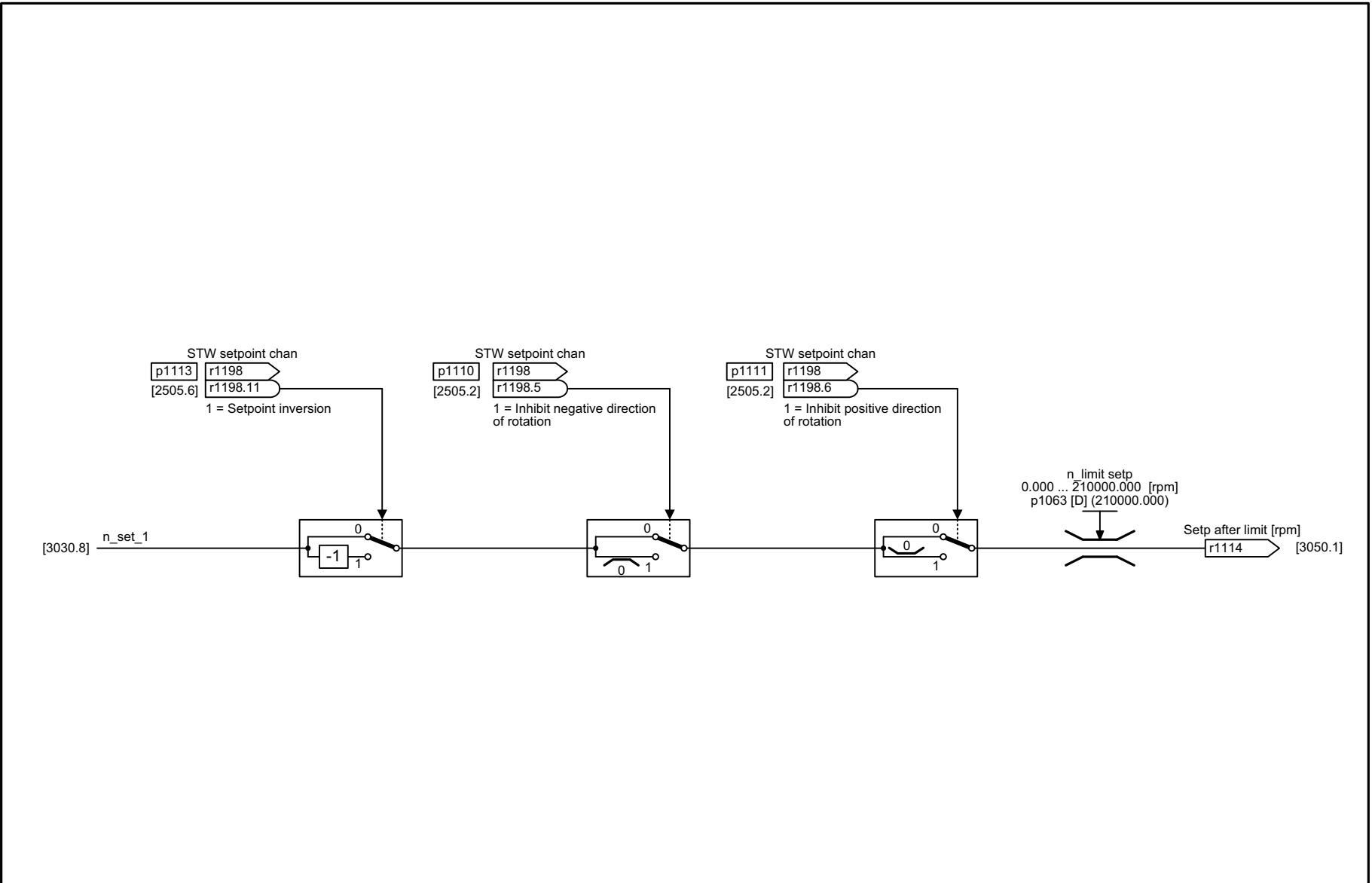




<1> Jogging can only be activated in the operating state "Ready for operation (S2)".  
 <2> If technology controller is activated (p2200 > 0, p2251 = 0) connected with r2349.4.  
 <3> If technology controller is activated (p2200 > 0, p2251 = 0) connected with r2294.  
 <4> The connection to the source for the main and additional setpoint is established automatically via the setting in p1000.

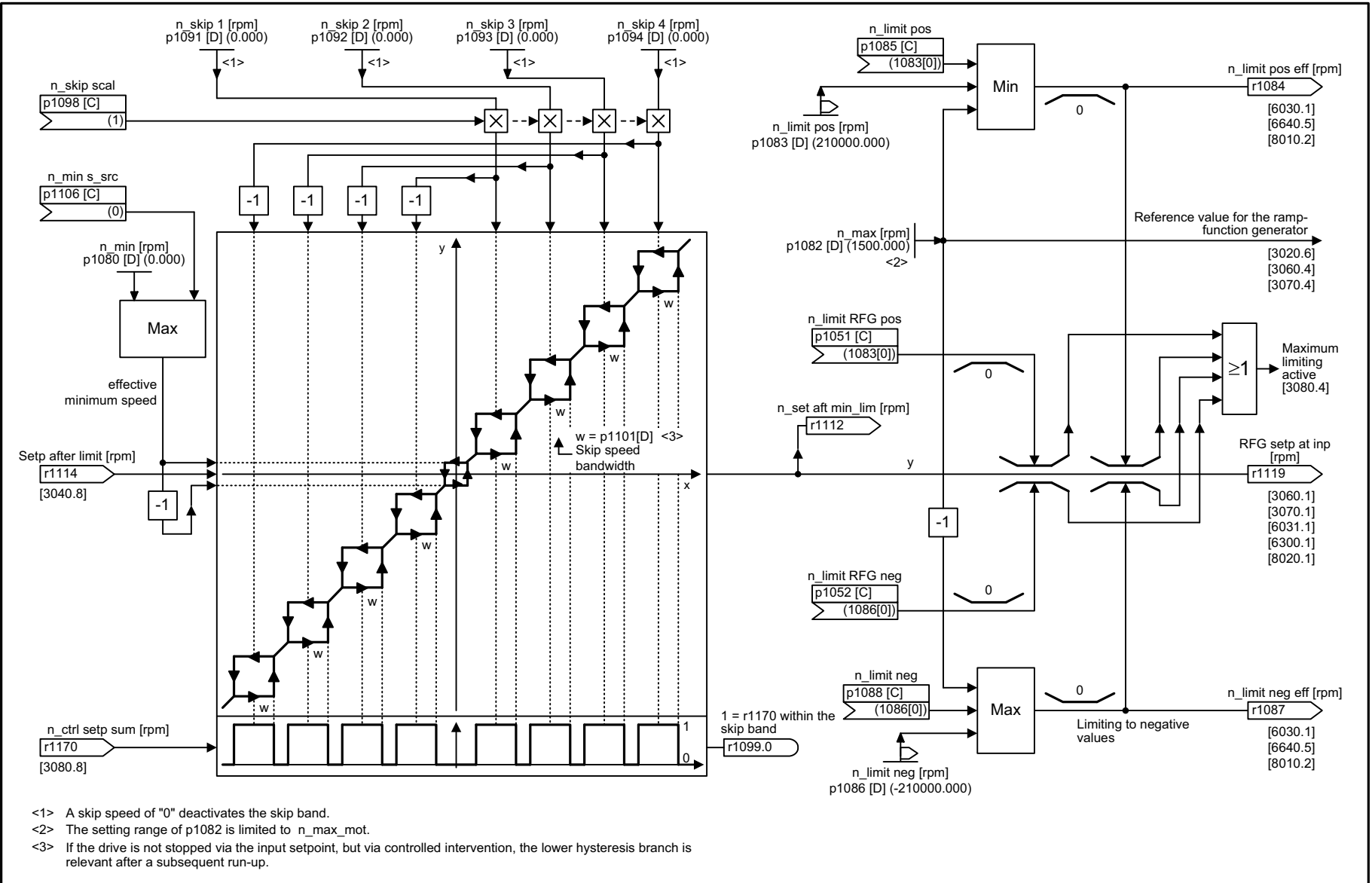
Fig. 3-79 3030 – Main/supplementary setpoint, setpoint scaling, jogging

1	2	3	4	5	6	7	8
Setpoint channel					fp_3030_97_51.vsd	Function diagram	
Main/supplementary setpoint, setpoint scaling, jogging					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 3030 -</b>



1	2	3	4	5	6	7	8
Setpoint channel					fp_3040_97_53.vsd	Function diagram	
Direction limitation and direction reversal					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 3040 -</b>

Fig. 3-80 3040 – Direction limitation and direction reversal

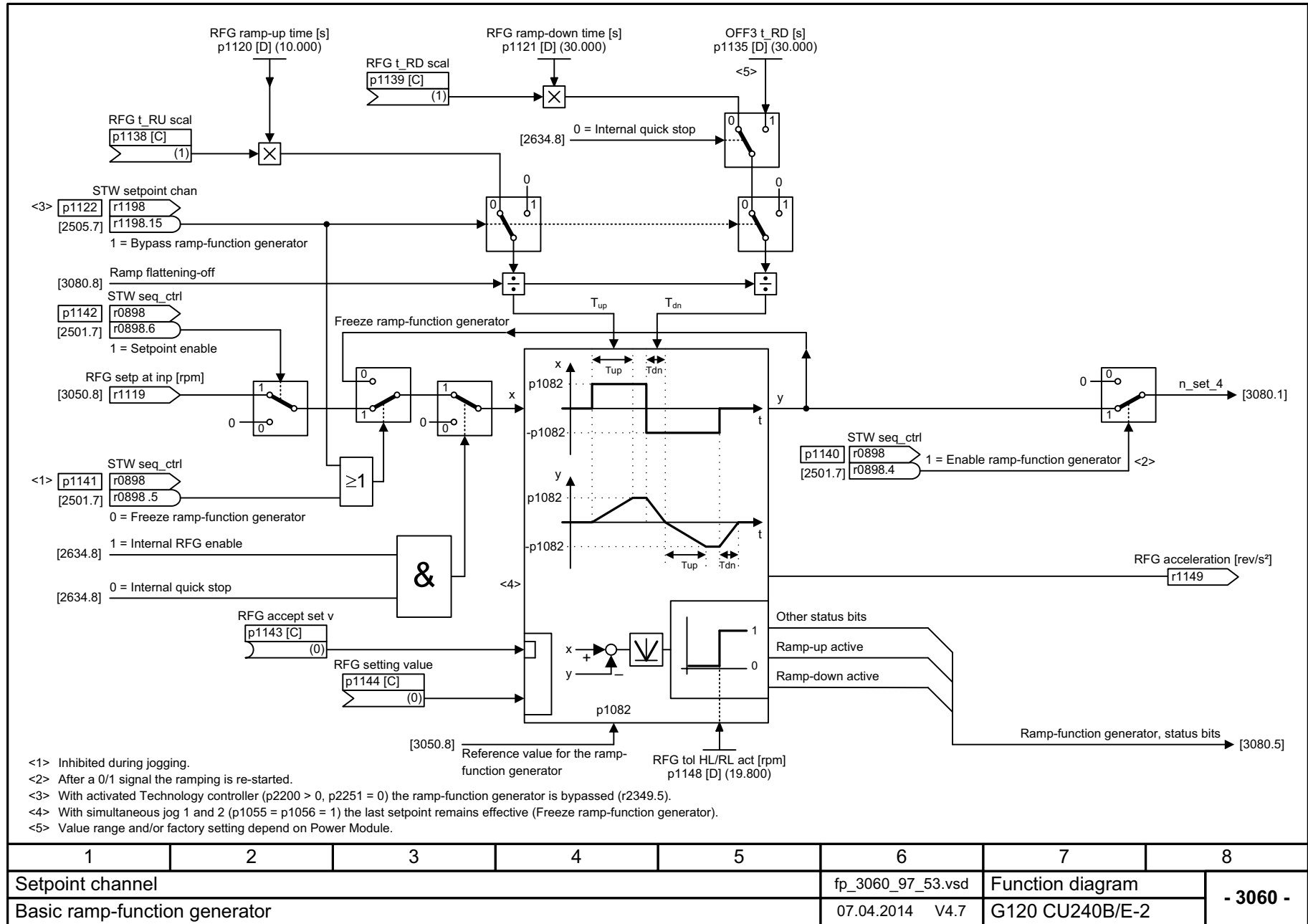


<1> A skip speed of "0" deactivates the skip band.  
 <2> The setting range of p1082 is limited to  $n\_max\_mot$ .  
 <3> If the drive is not stopped via the input setpoint, but via controlled intervention, the lower hysteresis branch is relevant after a subsequent run-up.

1	2	3	4	5	6	7	8
Setpoint channel					fp_3050_97_51.vsd	Function diagram	
Skip frequency bands and speed limitations					07.04.2014 V4.7	G120 CU240B/E-2	

Fig. 3-81 3050 – Skip frequency bands and speed limitations

Fig. 3-82 3060 – Basic ramp-function generator



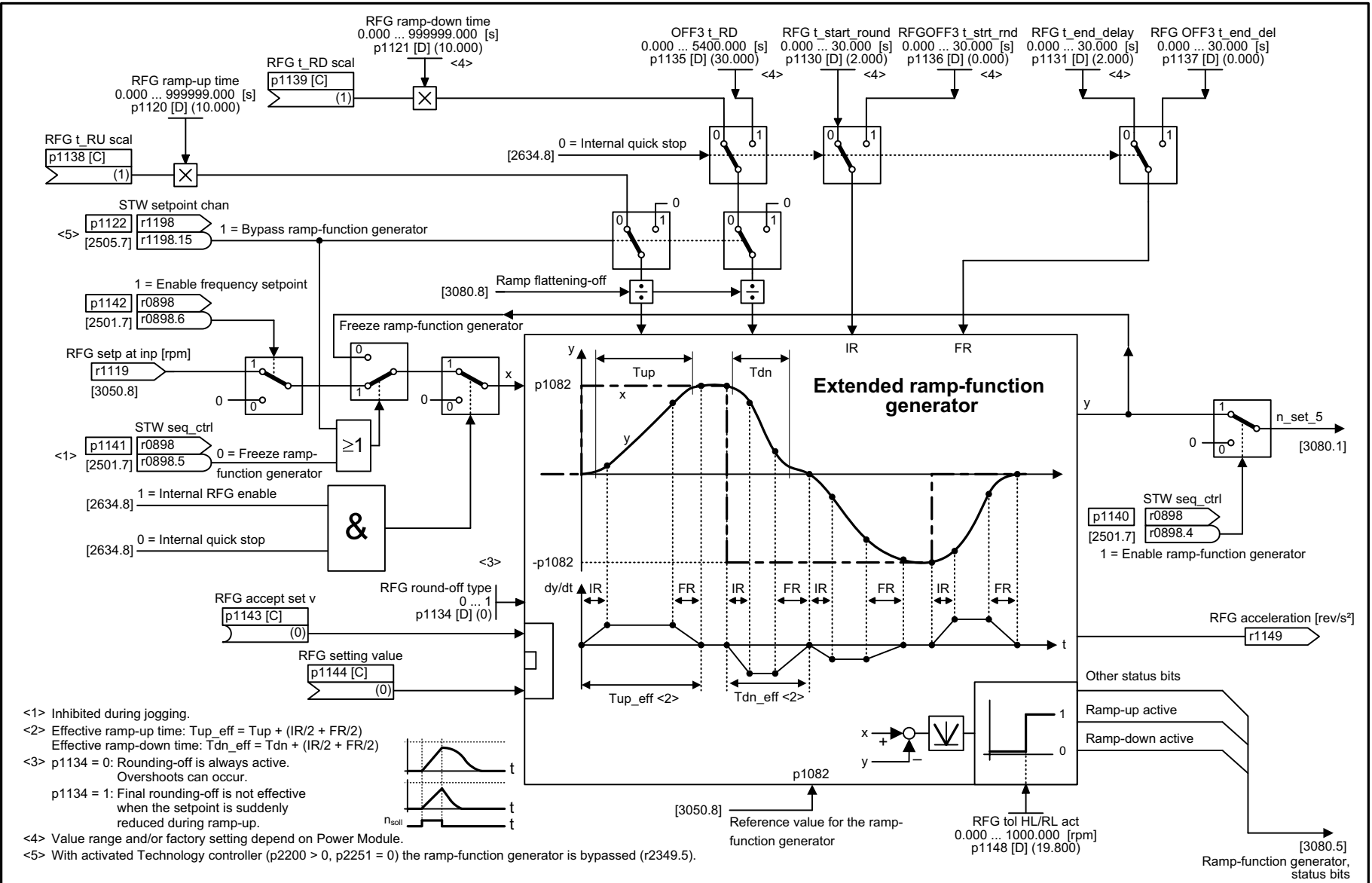


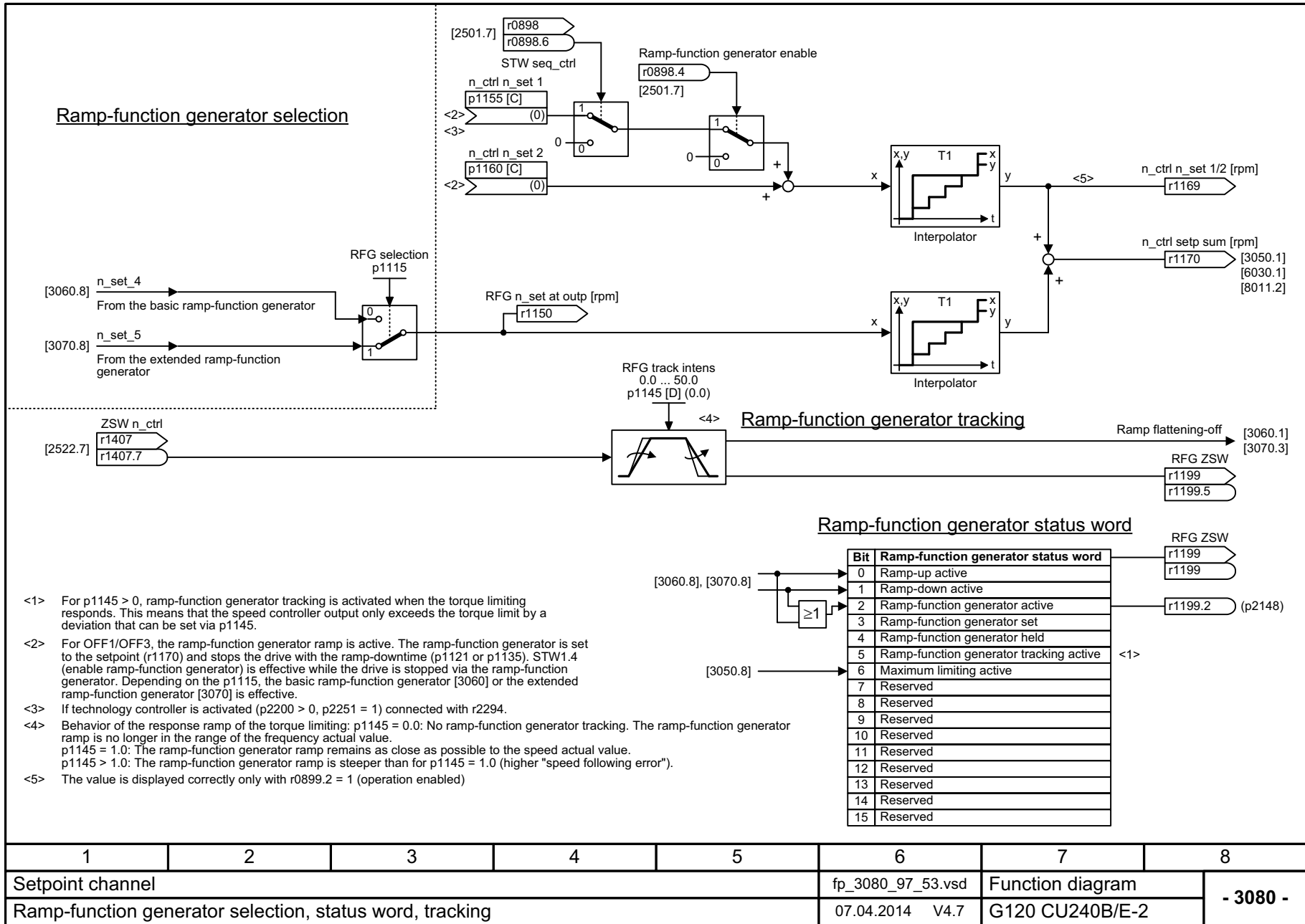
Fig. 3-83

3070 – Extended ramp-function generator

1	2	3	4	5	6	7	8
Setpoint channel					fp_3070_97_51.vsd	Function diagram	
Extended ramp-function generator					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 3070 -</b>



Fig. 3-84 3080 – Ramp-function generator selection, status word, tracking



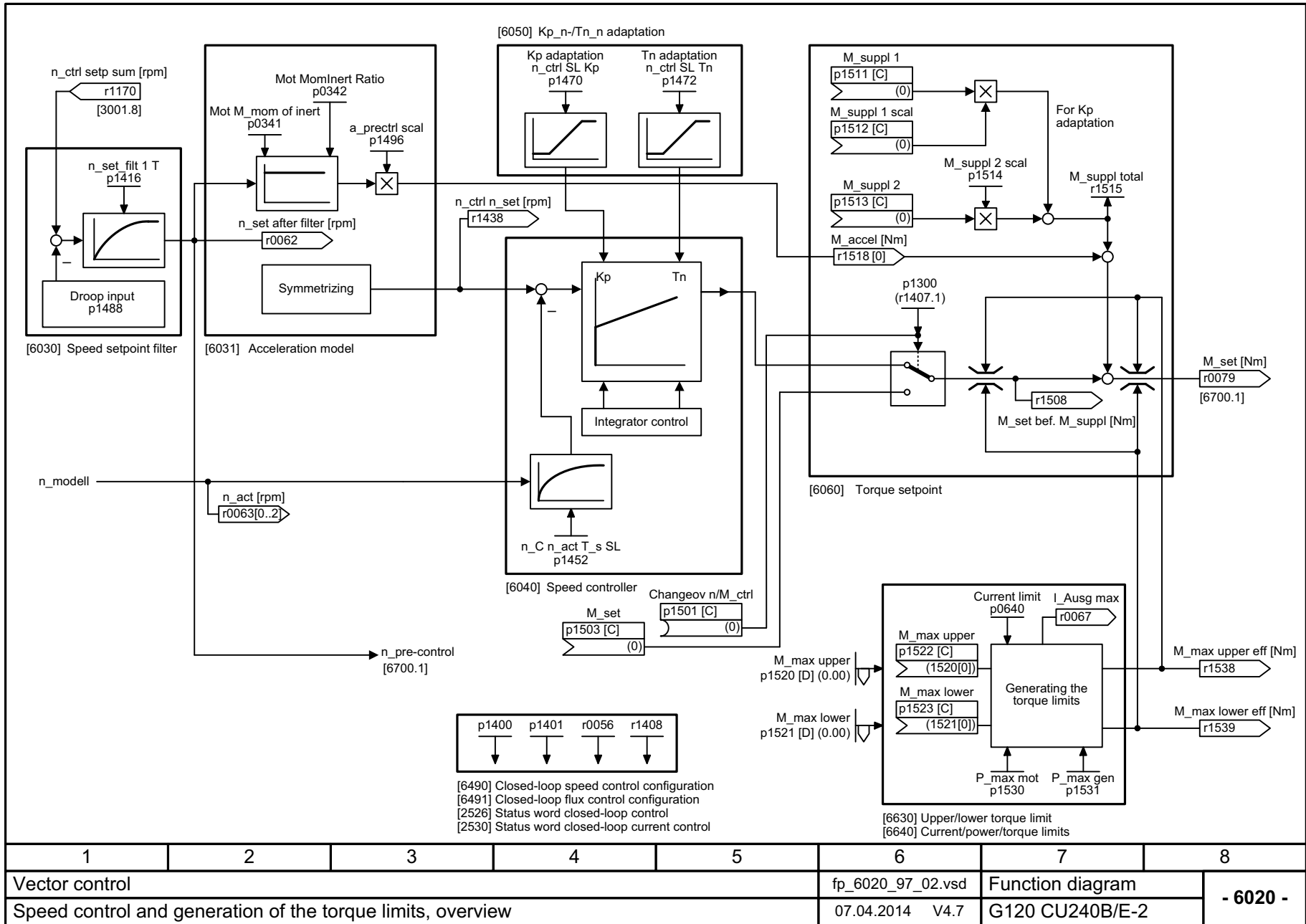
1	2	3	4	5	6	7	8
Setpoint channel					fp_3080_97_53.vsd	Function diagram	
Ramp-function generator selection, status word, tracking					07.04.2014 V4.7	G120 CU240B/E-2	
- 3080 -							

## 3.13 Vector control

### Function diagrams

6020 – Speed control and generation of the torque limits, overview	611
6030 – Speed setpoint, droop	612
6031 – Pre-control balancing, acceleration model	613
6040 – Speed controller	614
6050 – $K_p$ / $T_n$ adaptation	615
6060 – Torque setpoint	616
6220 – $V_{dc\_max}$ controller and $V_{dc\_min}$ controller (vector control, PM230/PM240)	617
6300 – U/f control, overview	618
6301 – U/f characteristic and voltage boost	619
6310 – Resonance damping and slip compensation (U/f)	620
6320 – $V_{dc\_max}$ controller and $V_{dc\_min}$ controller (PM230/PM240), (U/f)	621
6490 – Speed control configuration	622
6491 – Flux control configuration	623
6630 – Upper/lower torque limit	624
6640 – Current/power/torque limits	625
6700 – Current control, overview	626
6710 – Current setpoint filter	627
6714 – $I_q$ and $I_d$ controllers	628
6721 – $I_d$ setpoint (PEM, p0300 = 2xx)	629
6722 – Field weakening characteristic, $I_d$ setpoint (ASM, p0300 = 1)	630
6723 – Field weakening controller, flux controller (ASM, p0300 = 1)	631
6724 – Field weakening controller (PEM, p0300 = 2xx)	632
6730 – Interface to the Power Module (ASM, p0300 = 1)	633
6731 – Interface to the Power Module (PEM, p0300 = 2xx)	634
6799 – Display signals	635

Fig. 3-85 6020 – Speed control and generation of the torque limits, overview



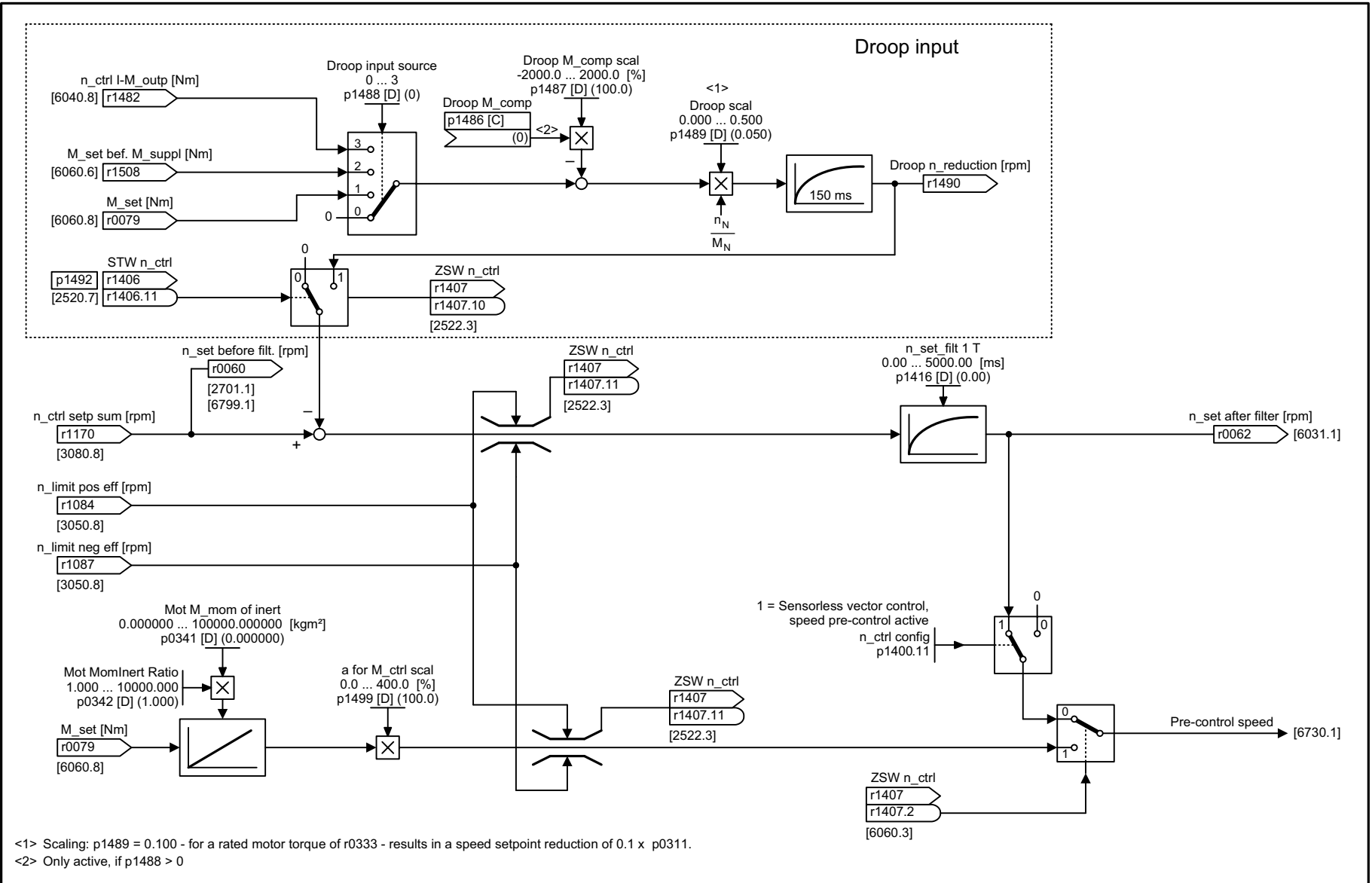
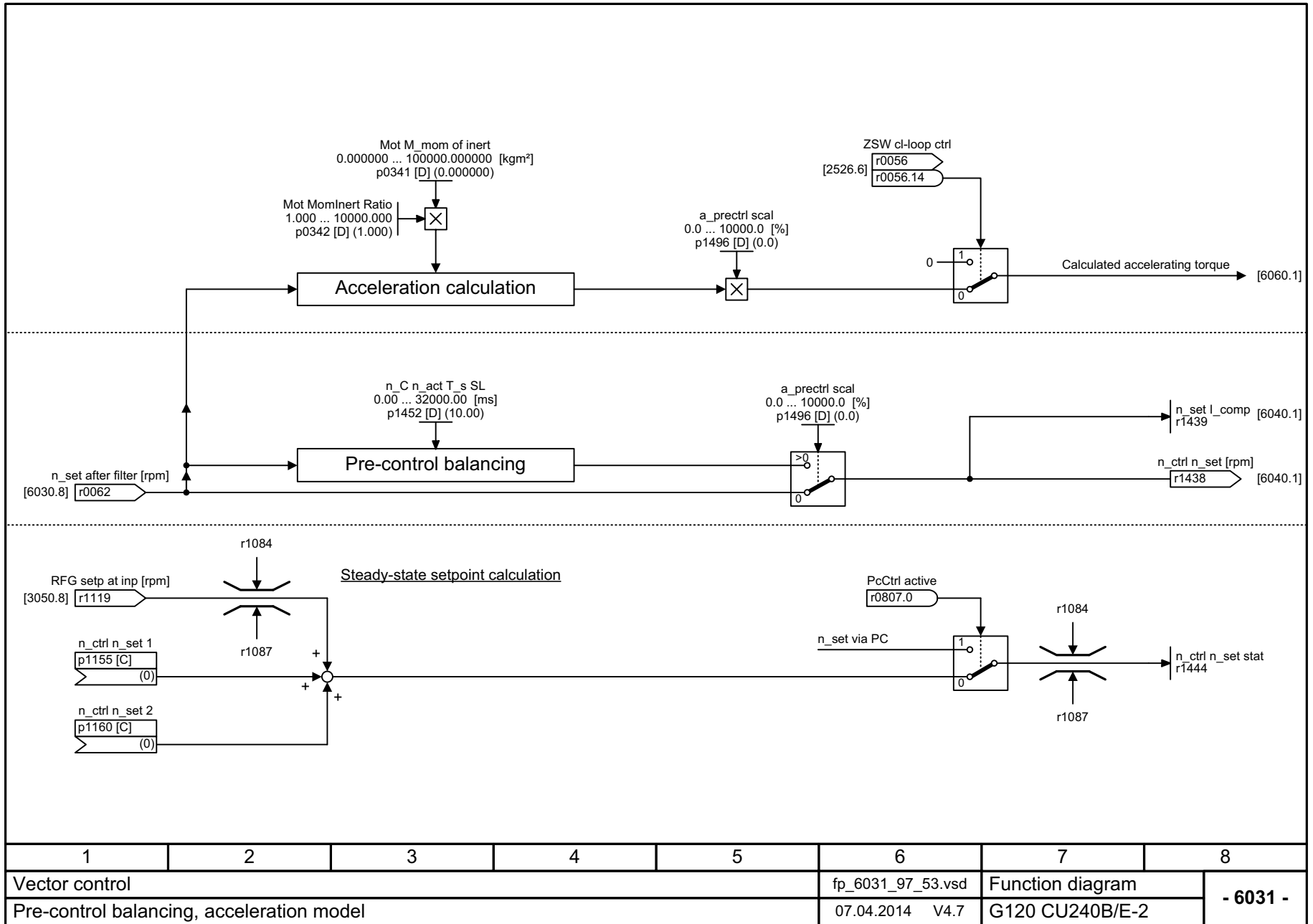


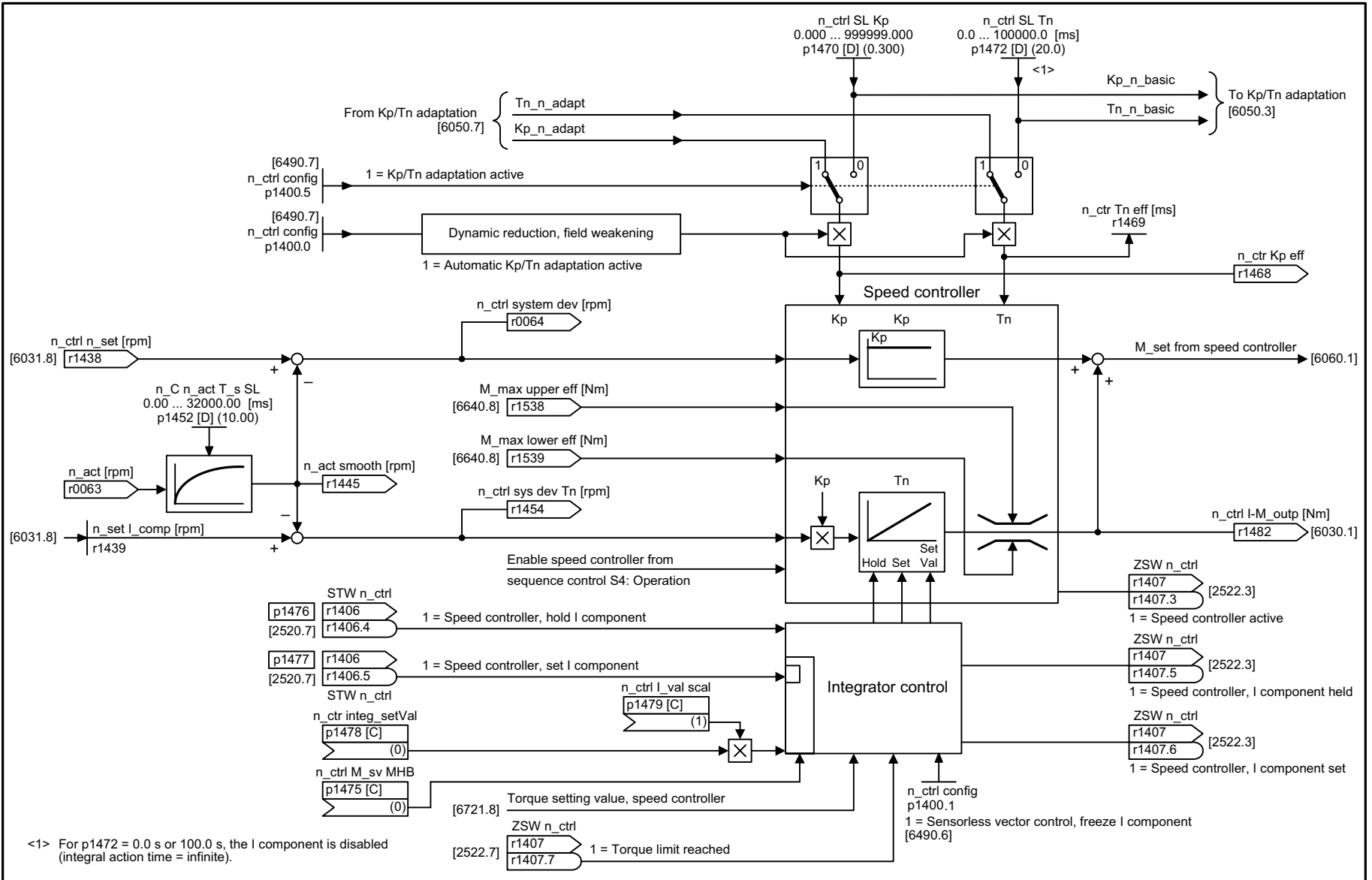
Fig. 3-86 6030 – Speed setpoint, droop

1	2	3	4	5	6	7	8
Vector control					fp_6030_97_02.vsd	Function diagram	
Speed setpoint, droop					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 6030 -</b>

Fig. 3-87 6031 – Pre-control balancing, acceleration model



1	2	3	4	5	6	7	8
Vector control					fp_6031_97_53.vsd	Function diagram	
Pre-control balancing, acceleration model					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 6031 -</b>

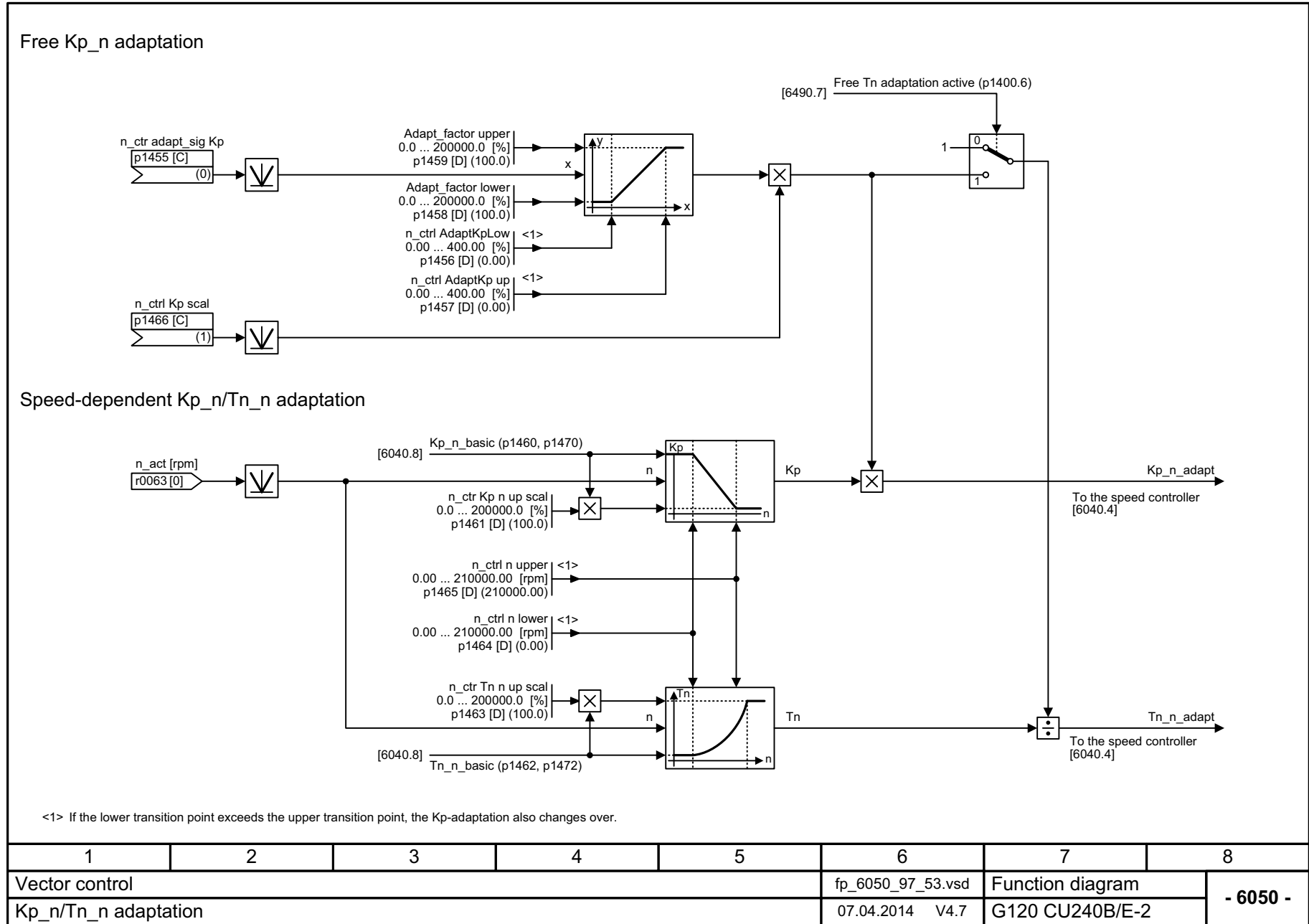


<1> For p1472 = 0.0 s or 100.0 s, the I component is disabled (integral action time = infinite).

1	2	3	4	5	6	7	8
Vector control					fp_6040_97_02.vsd	Function diagram	
Speed controller					07.04.2014 V4.7	G120 CU240B/E-2	
- 6040 -							

Fig. 3-88 6040 – Speed controller

Fig. 3-89 6050 – Kp\_n/Tn\_n adaptation



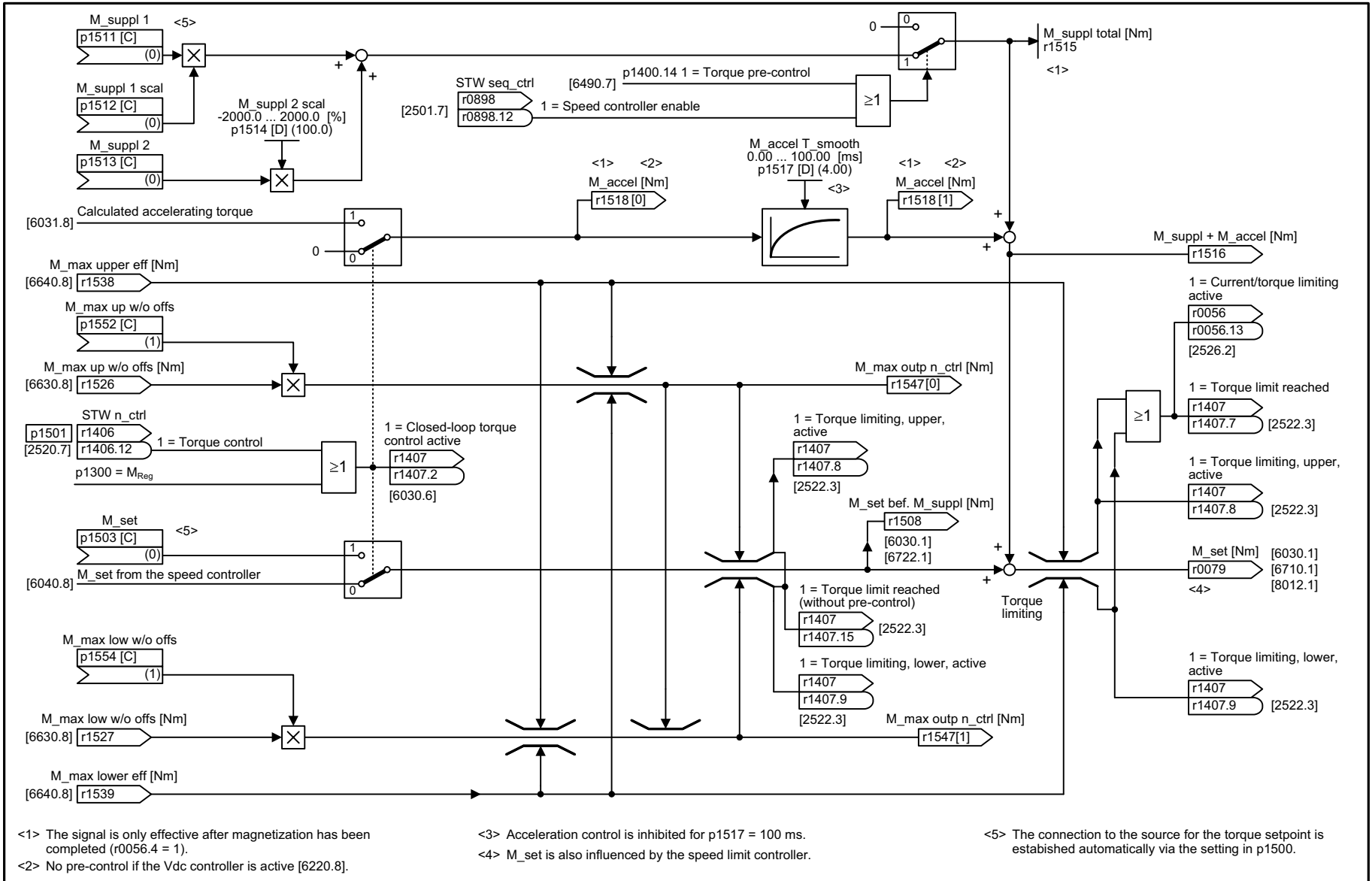
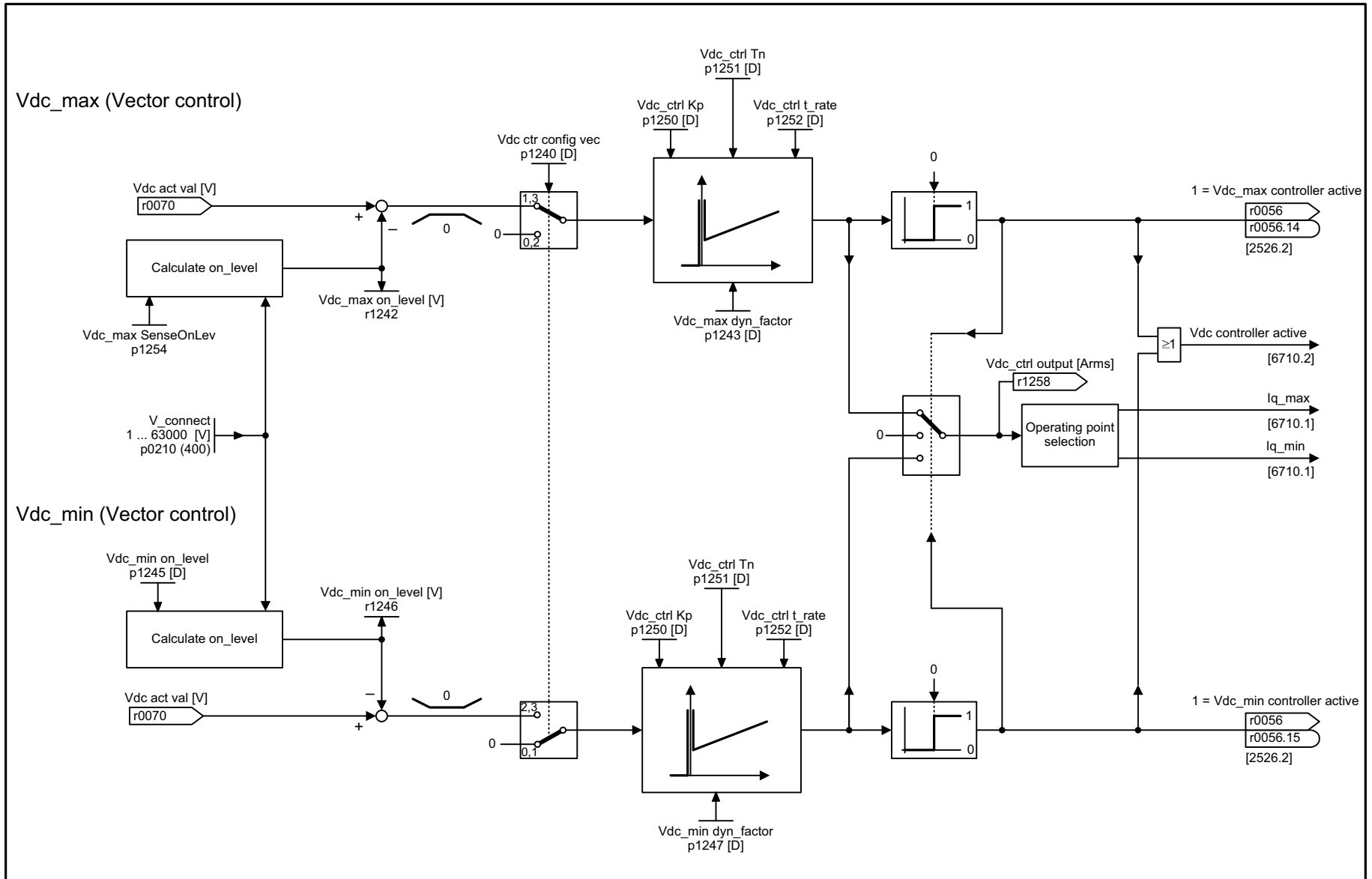


Fig. 3-90 6060 – Torque setpoint

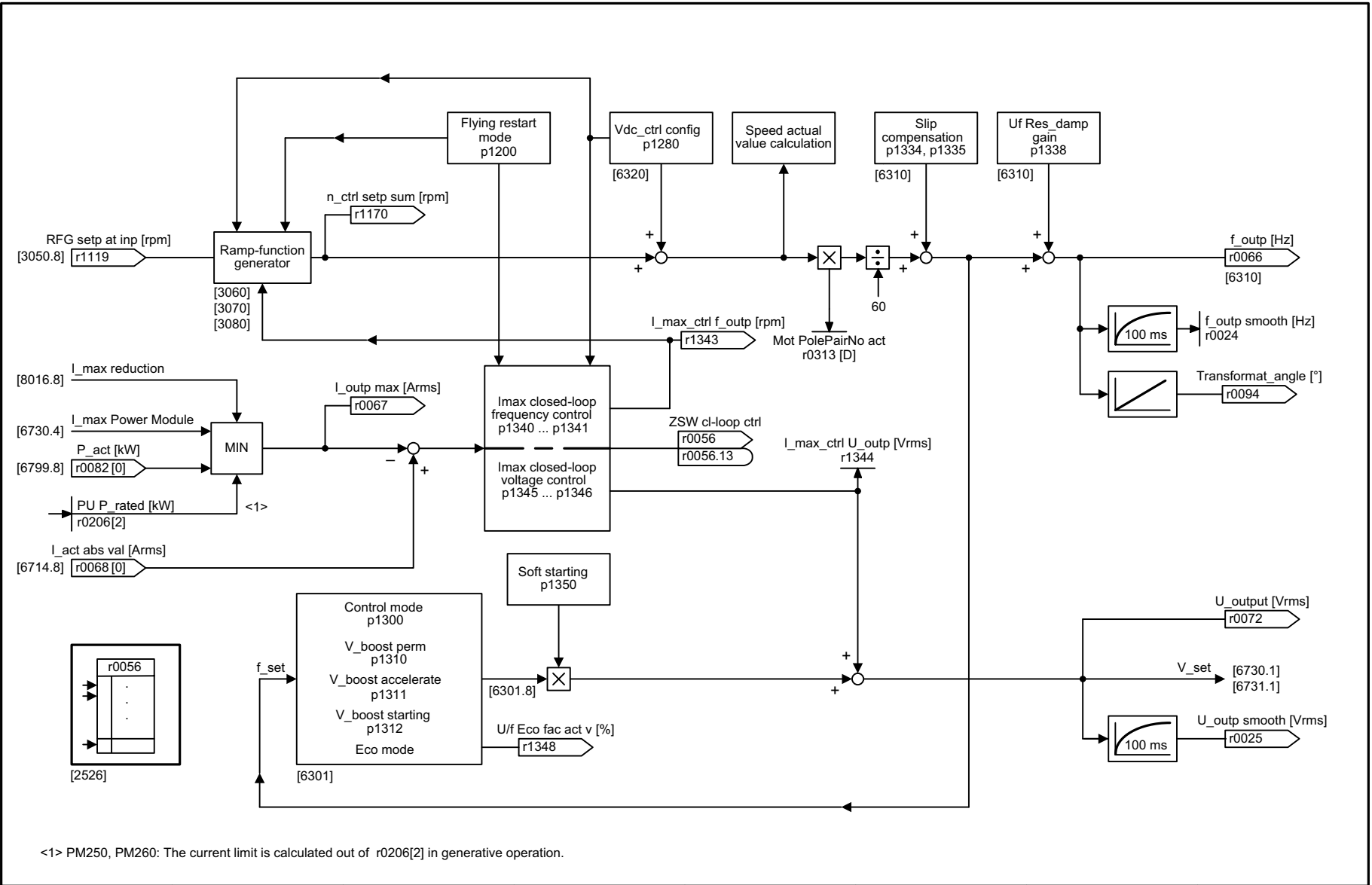
1	2	3	4	5	6	7	8
Vector control					fp_6060_97_53.vsd	Function diagram	
Torque setpoint					07.04.2014 V4.7	G120 CU240B/E-2	
<b>- 6060 -</b>							



Fig. 3-91 6220 – Vdc\_max controller and Vdc\_min controller (vector control, PM230/PM240)



1	2	3	4	5	6	7	8
Vector control					fp_6220_97_52.vsd	Function diagram	
Vdc_max controller and Vdc_min controller (PM230/PM240)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 6220 -</b>

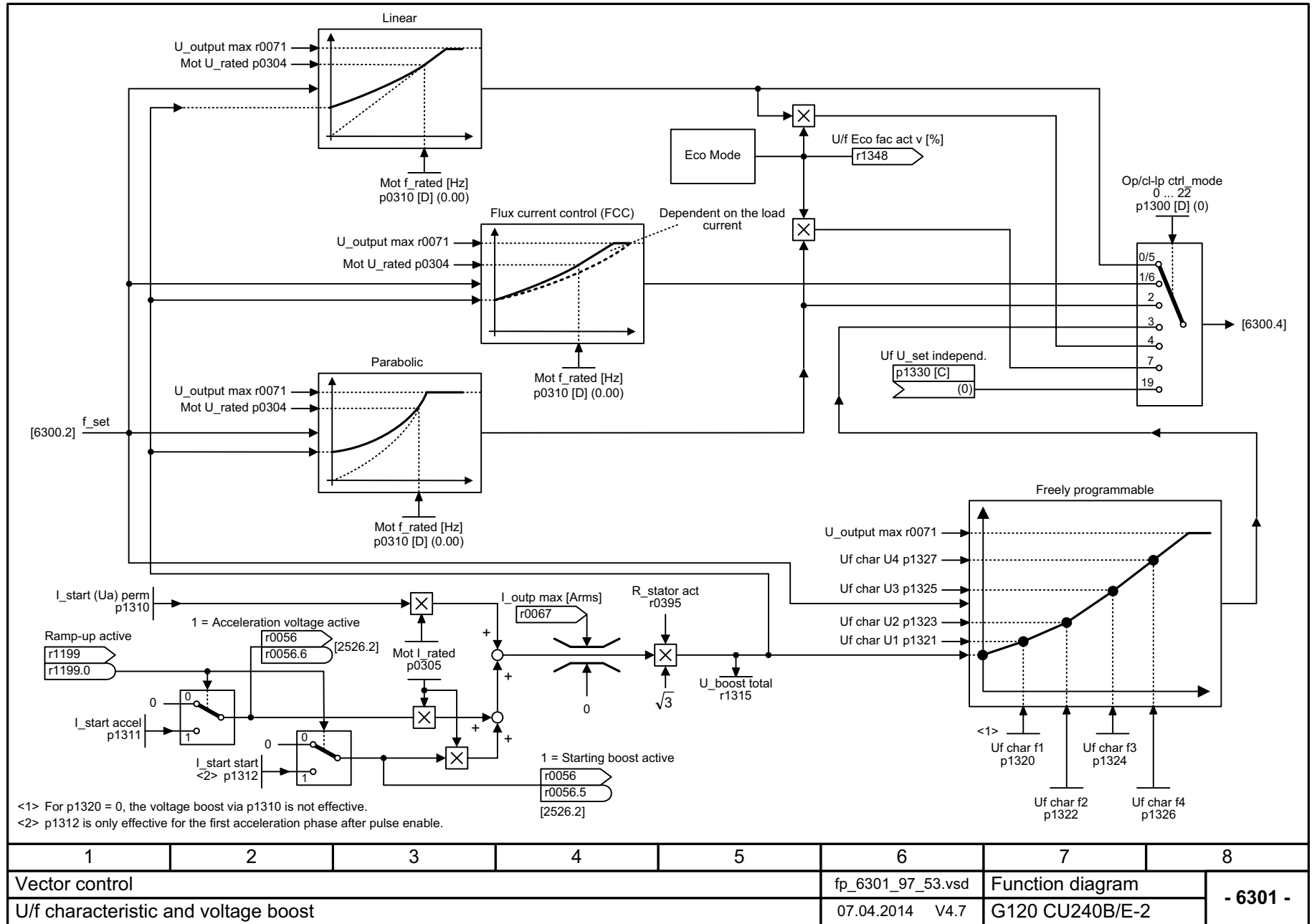


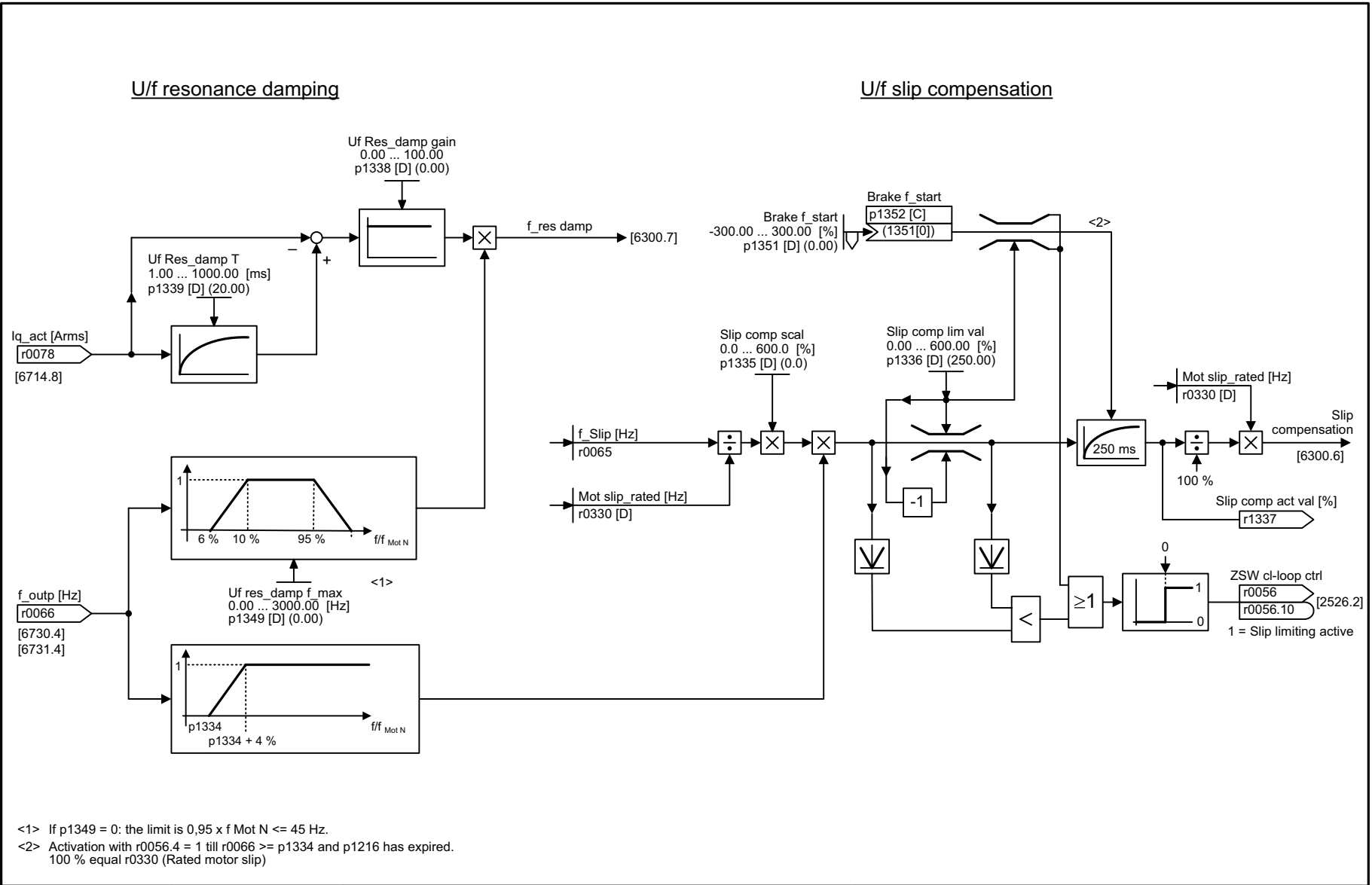
<1> PM250, PM260: The current limit is calculated out of r0206[2] in generative operation.

1	2	3	4	5	6	7	8
Vector control					fp_6300_97_56.vsd	Function diagram	
U/f control, overview					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 6300 -</b>

Fig. 3-92 6300 – U/f control, overview

Fig. 3-93 6301 – U/f characteristic and voltage boost



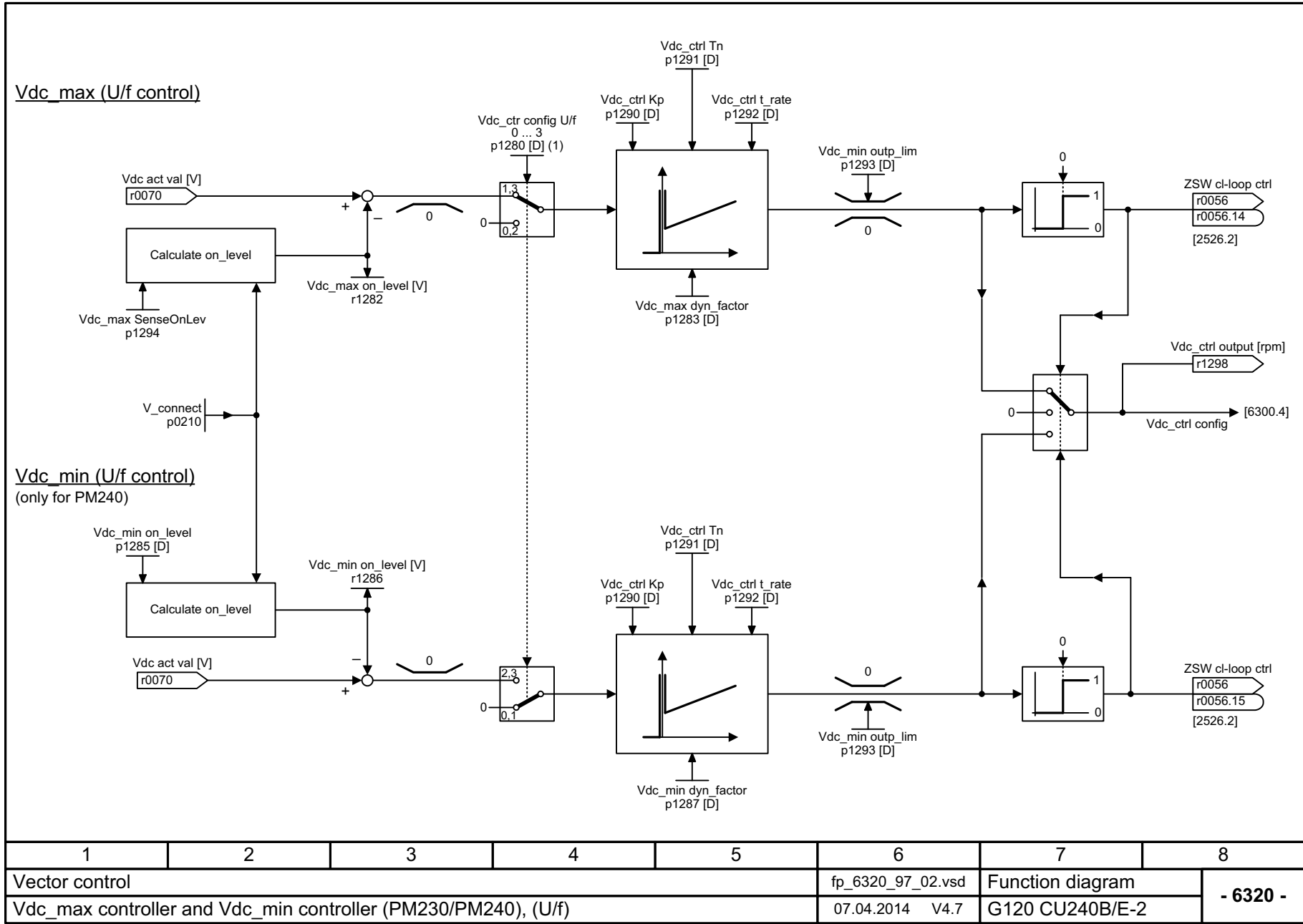


<1> If p1349 = 0: the limit is 0,95 x f Mot N <= 45 Hz.  
 <2> Activation with r0056.4 = 1 till r0066 >= p1334 and p1216 has expired.  
 100 % equal r0330 (Rated motor slip)

1	2	3	4	5	6	7	8
Vector control					fp_6310_97_53.vsd	Function diagram	
Resonance damping and slip compensation (U/f)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 6310 -</b>

Fig. 3-94 6310 – Resonance damping and slip compensation (U/f)

Fig. 3-95 6320 – Vdc\_max controller and Vdc\_min controller (PM230/PM240), (U/f)



1	2	3	4	5	6	7	8
Vector control					fp_6320_97_02.vsd	Function diagram	
Vdc_max controller and Vdc_min controller (PM230/PM240), (U/f)					07.04.2014 V4.7	G120 CU240B/E-2	
							- 6320 -

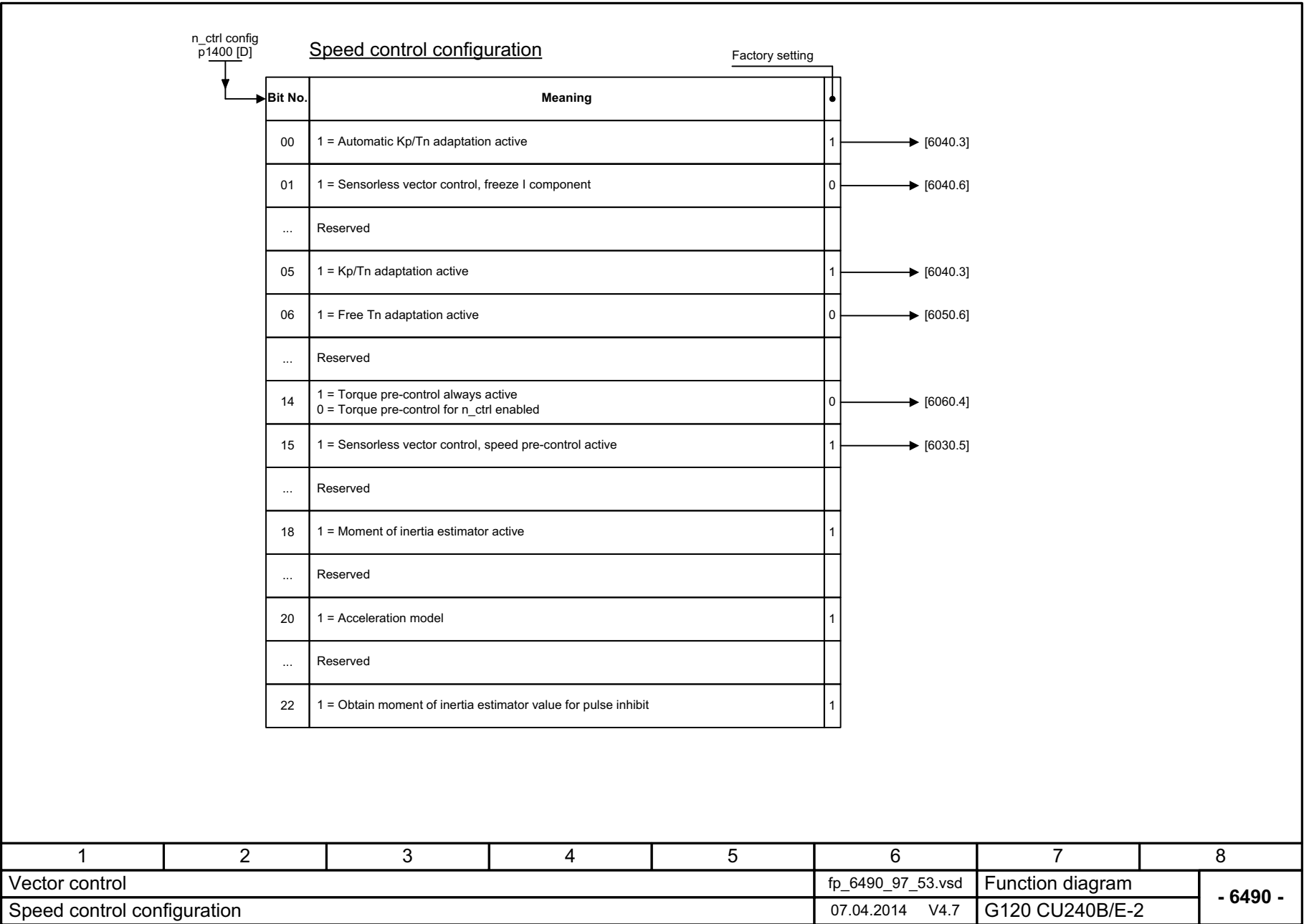


Fig. 3-96 6490 – Speed control configuration

Flux control, configuration		Factory setting	
Bit No.	Meaning		
00	1 = Flux setpoint, soft starting active	0	[6722.5]
01	1 = Flux setpoint, differentiation active	1	[6723.6]
02	1 = Flux build-up control active	1	[6722.5], [6723.6]
03	Reserved		
04	Reserved		
05	Reserved		
06	1 = Quick magnetization	0	[6722.5]
07	1 = Pre-control speed limitation	0	
08	Reserved		
09	Reserved		
10	Reserved		
11	Reserved		
12	Reserved		
13	Reserved		
14	Reserved		
15	Reserved		

1	2	3	4	5	6	7	8
Vector control					fp_6491_97_53.vsd	Function diagram	
Flux control configuration					07.04.2014 V4.7	G120 CU240B/E-2	

Flux ctrl config  
p1401 [D]

Fig. 3-97 6491 – Flux control configuration

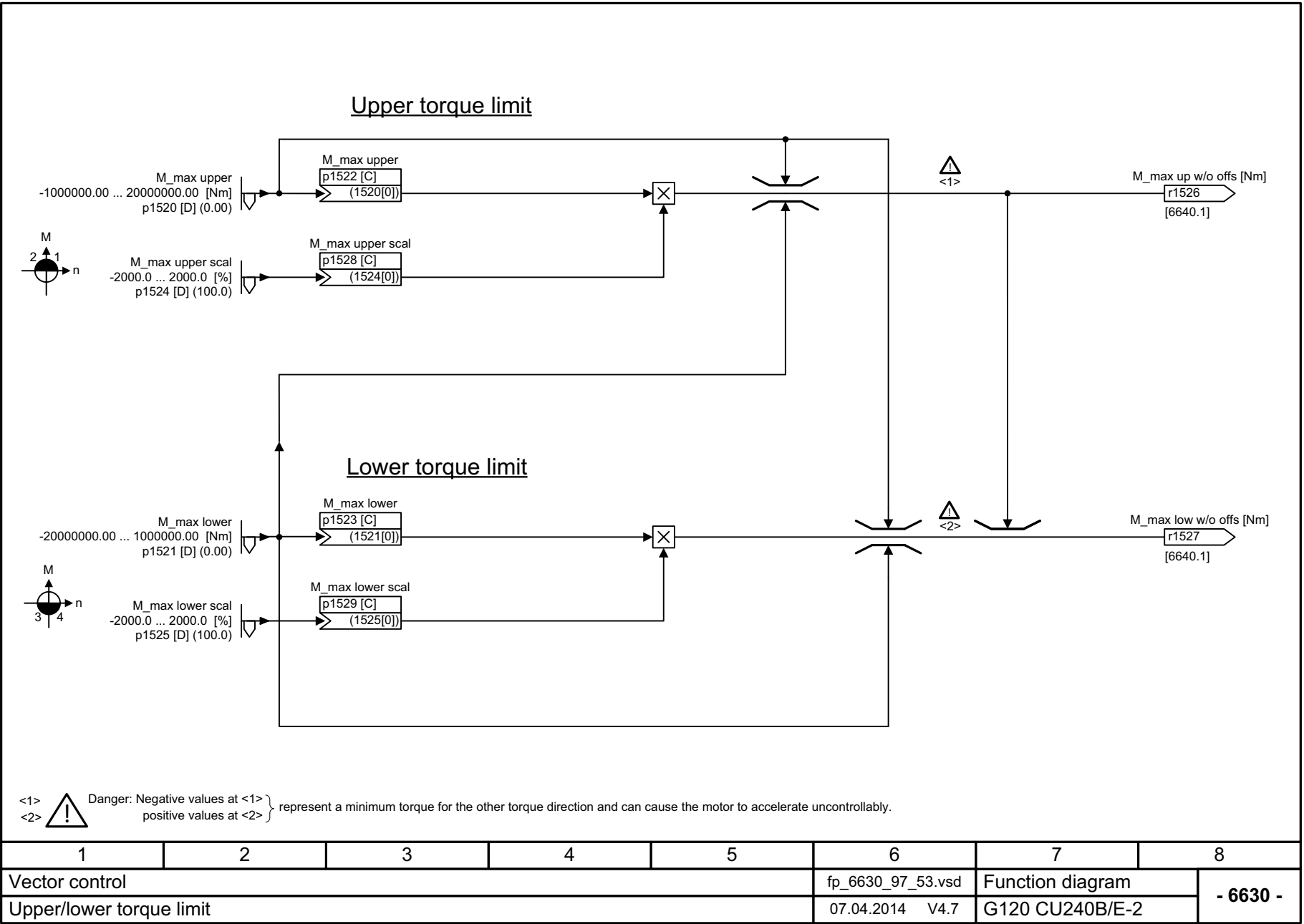
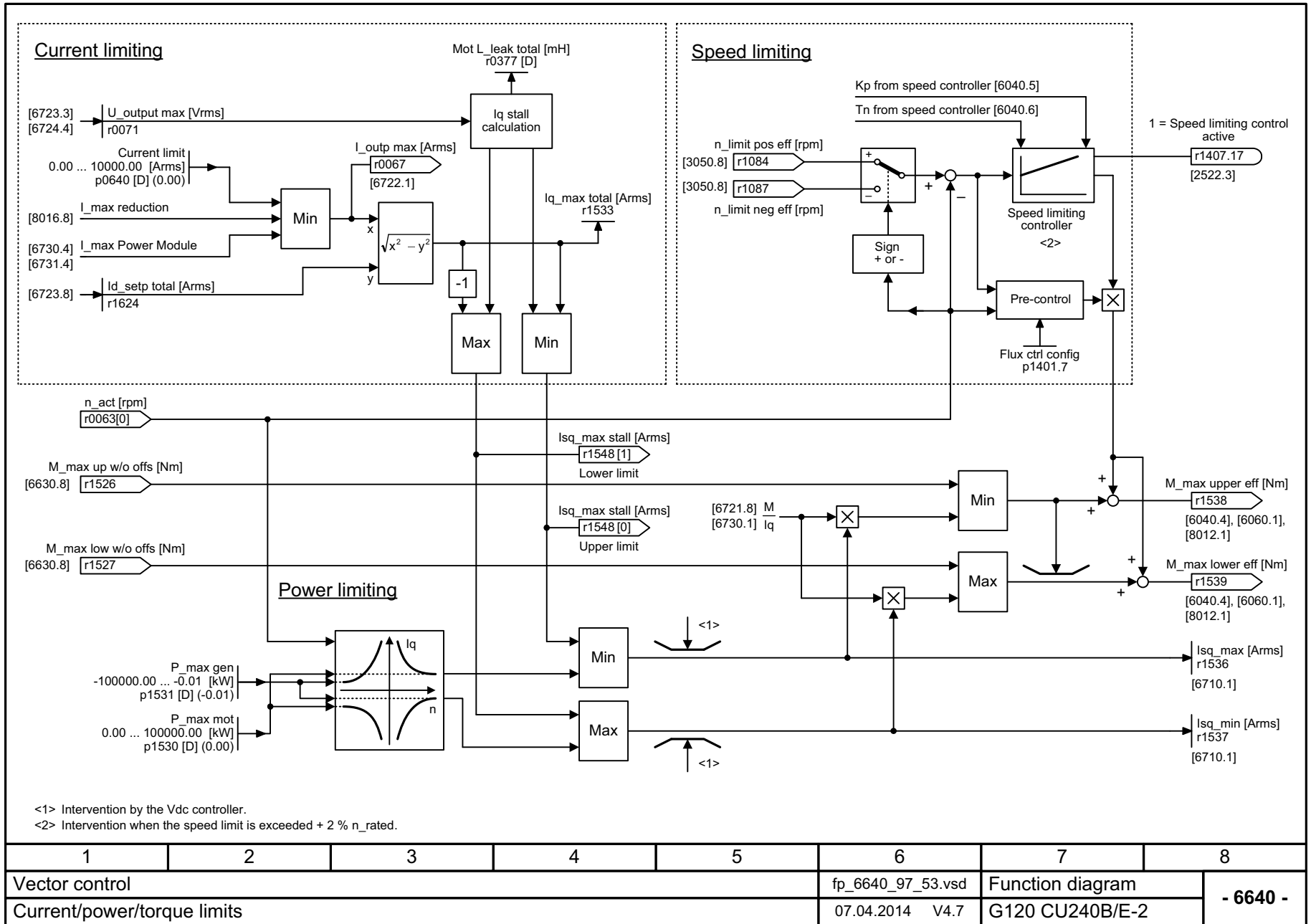


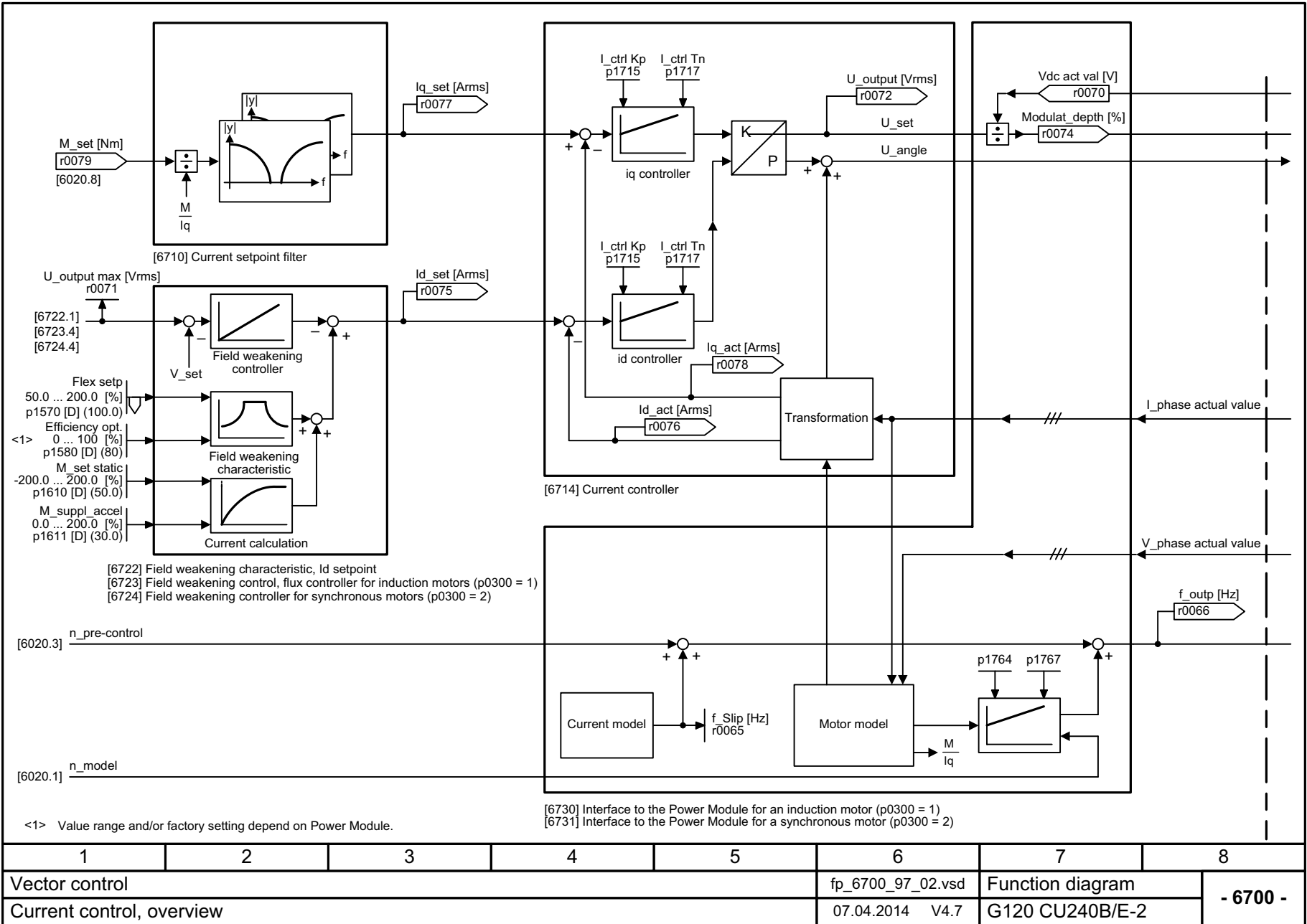
Fig. 3-98 6630 – Upper/lower torque limit

1	2	3	4	5	6	7	8
Vector control					fp_6630_97_53.vsd	Function diagram	
Upper/lower torque limit					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 6630 -</b>



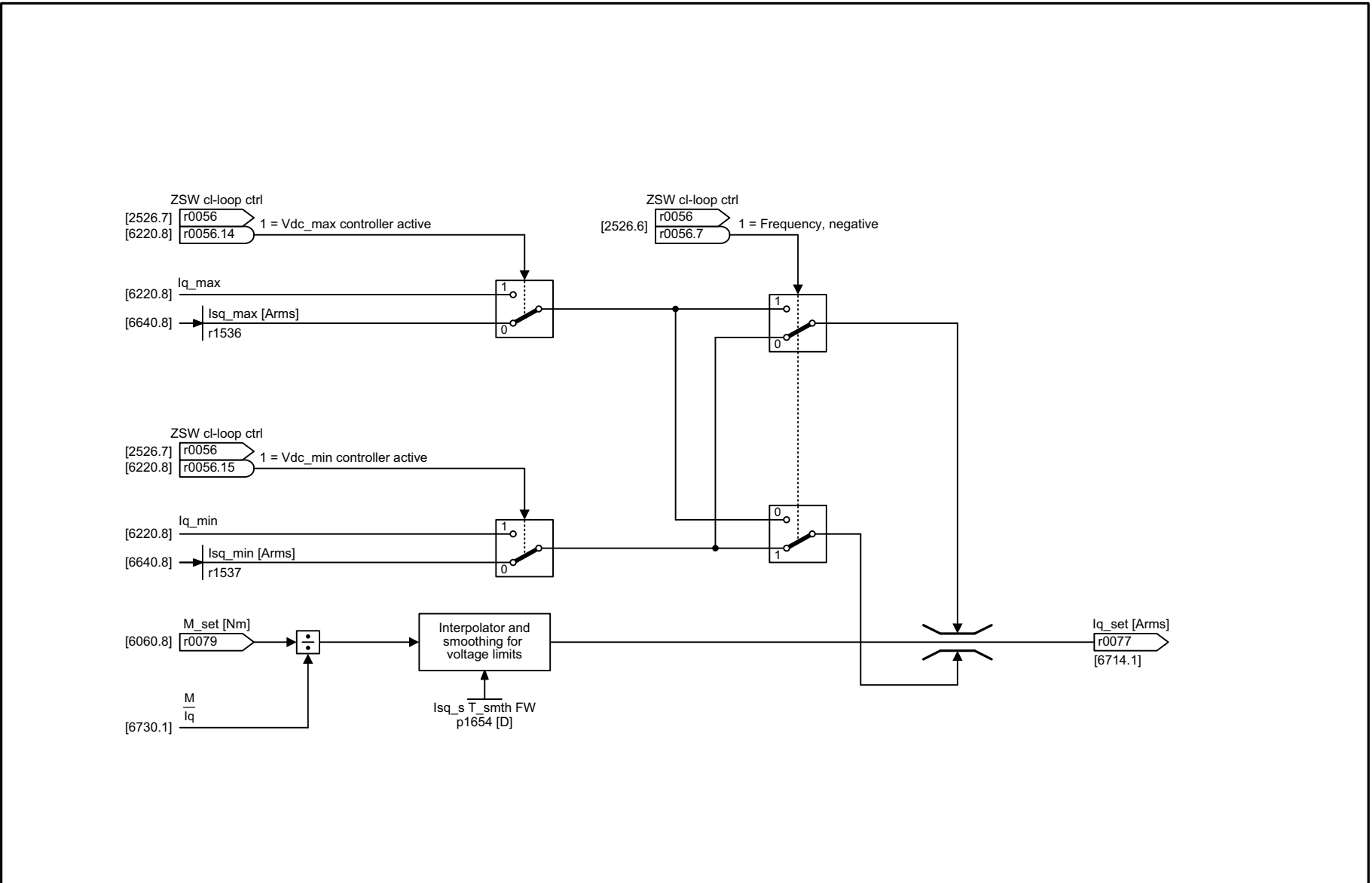
Fig. 3-99 6640 – Current/power/torque limits





1	2	3	4	5	6	7	8
Vector control					fp_6700_97_02.vsd	Function diagram	
Current control, overview					07.04.2014 V4.7	G120 CU240B/E-2	
- 6700 -							

Fig. 3-100 6700 – Current control, overview



1	2	3	4	5	6	7	8
Vector control					fp_6710_97_51.vsd	Function diagram	
Current setpoint filter					07.04.2014 V4.7	G120 CU240B/E-2	
- 6710 -							

Fig. 3-101 6710 – Current setpoint filter

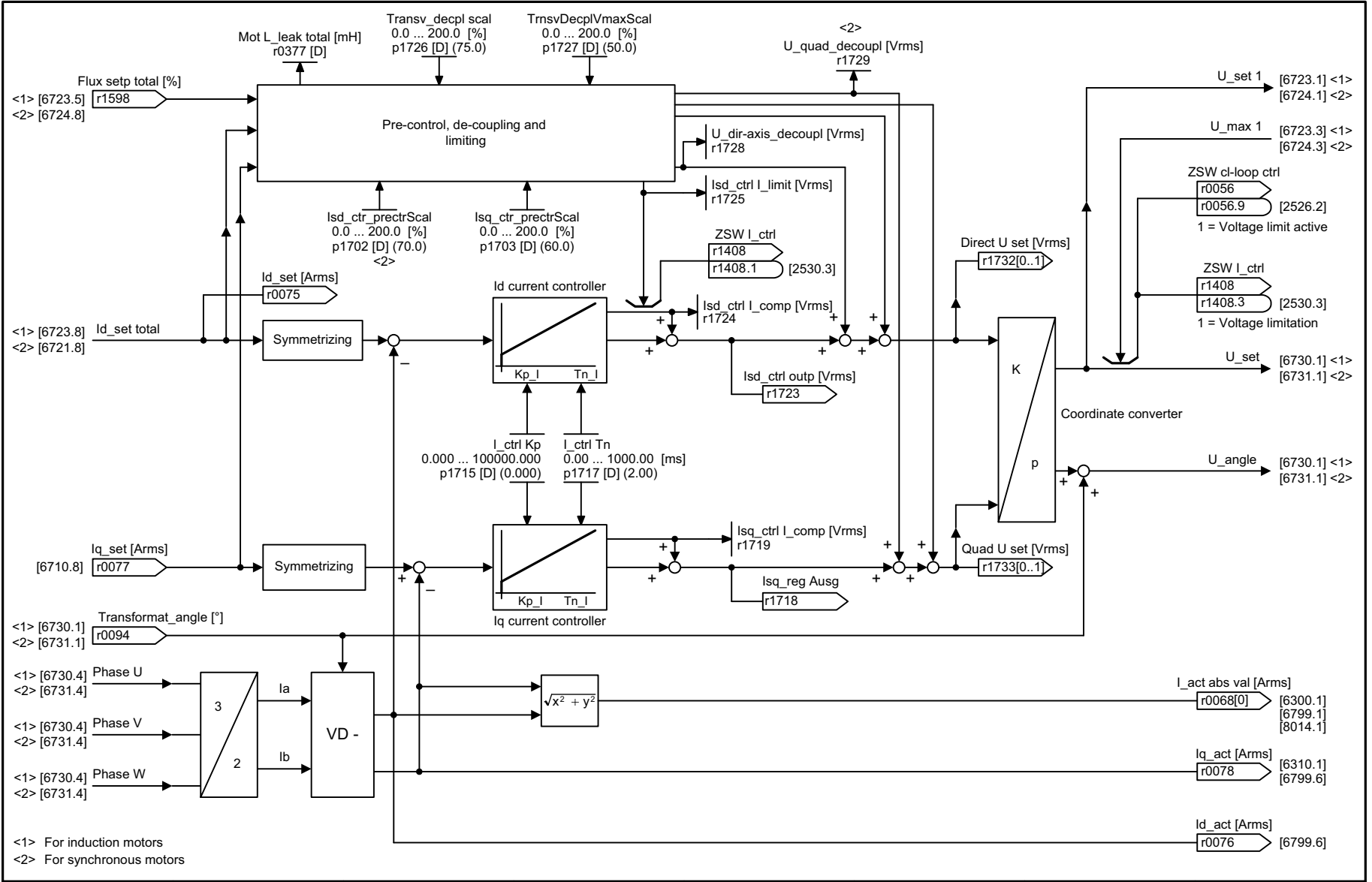
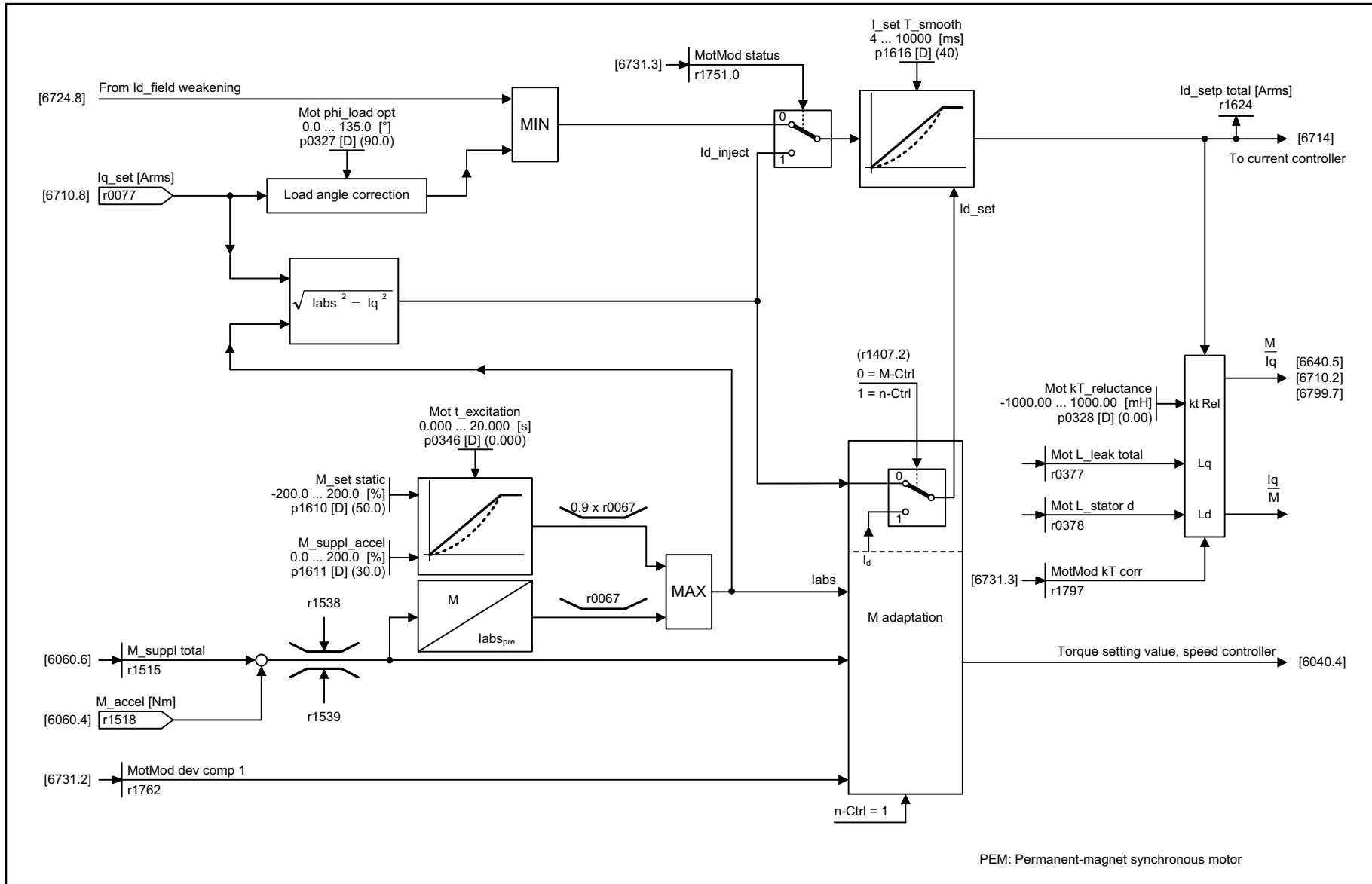


Fig. 3-102 6714 – Iq and Id controllers

1	2	3	4	5	6	7	8
Vector control					fp_6714_97_53.vsd	Function diagram	
Iq and Id controllers					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 6714 -</b>

Fig. 3-103 6721 – Id setpoint (PEM, p0300 = 2xx)



PEM: Permanent-magnet synchronous motor

1	2	3	4	5	6	7	8
Vector control					fp_6721_97_53.vsd	Function diagram	
Id setpoint (PEM, p0300 = 2xx)					07.04.2014 V4.7	G120 CU240B/E-2	
							- 6721 -

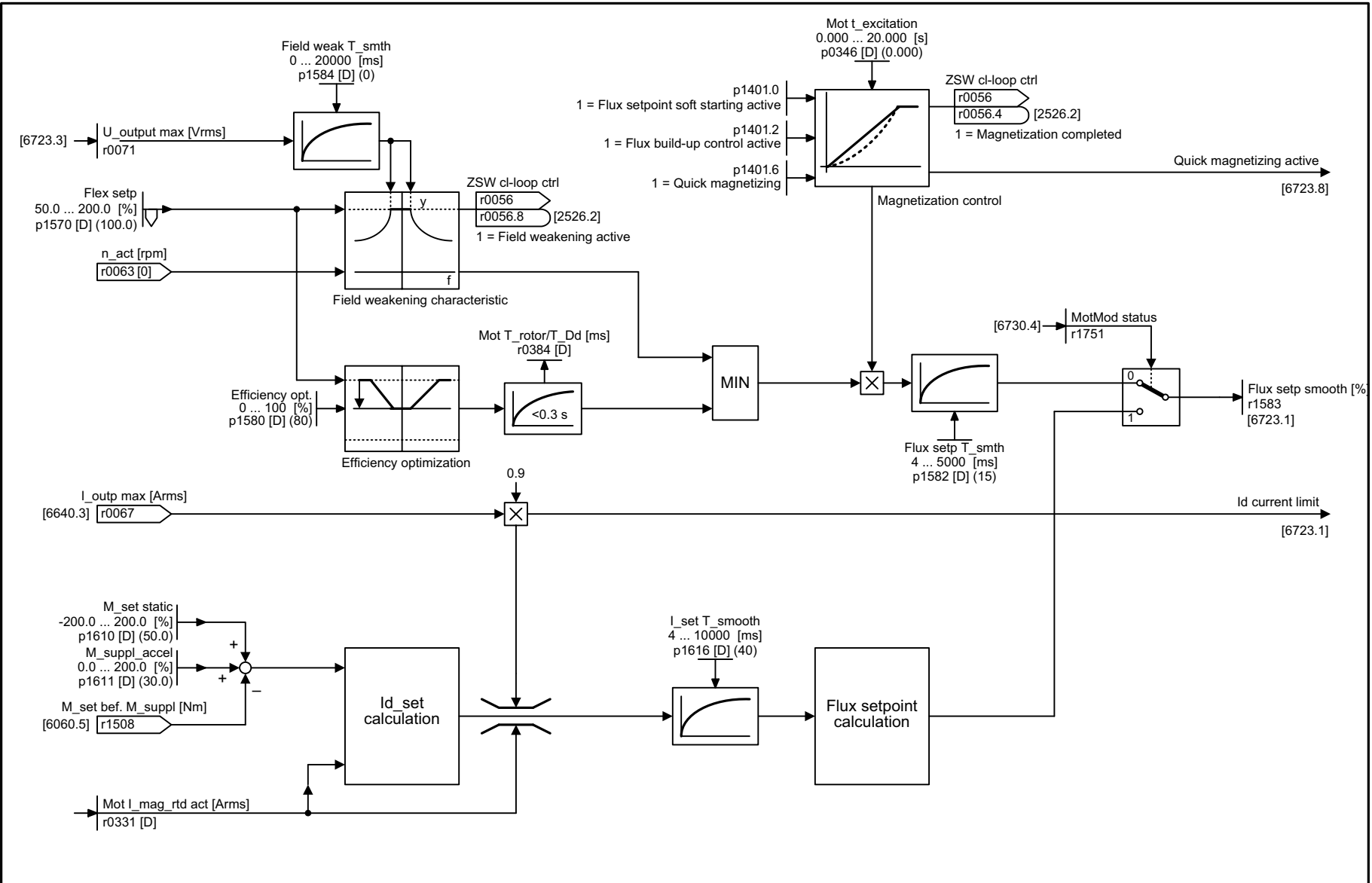
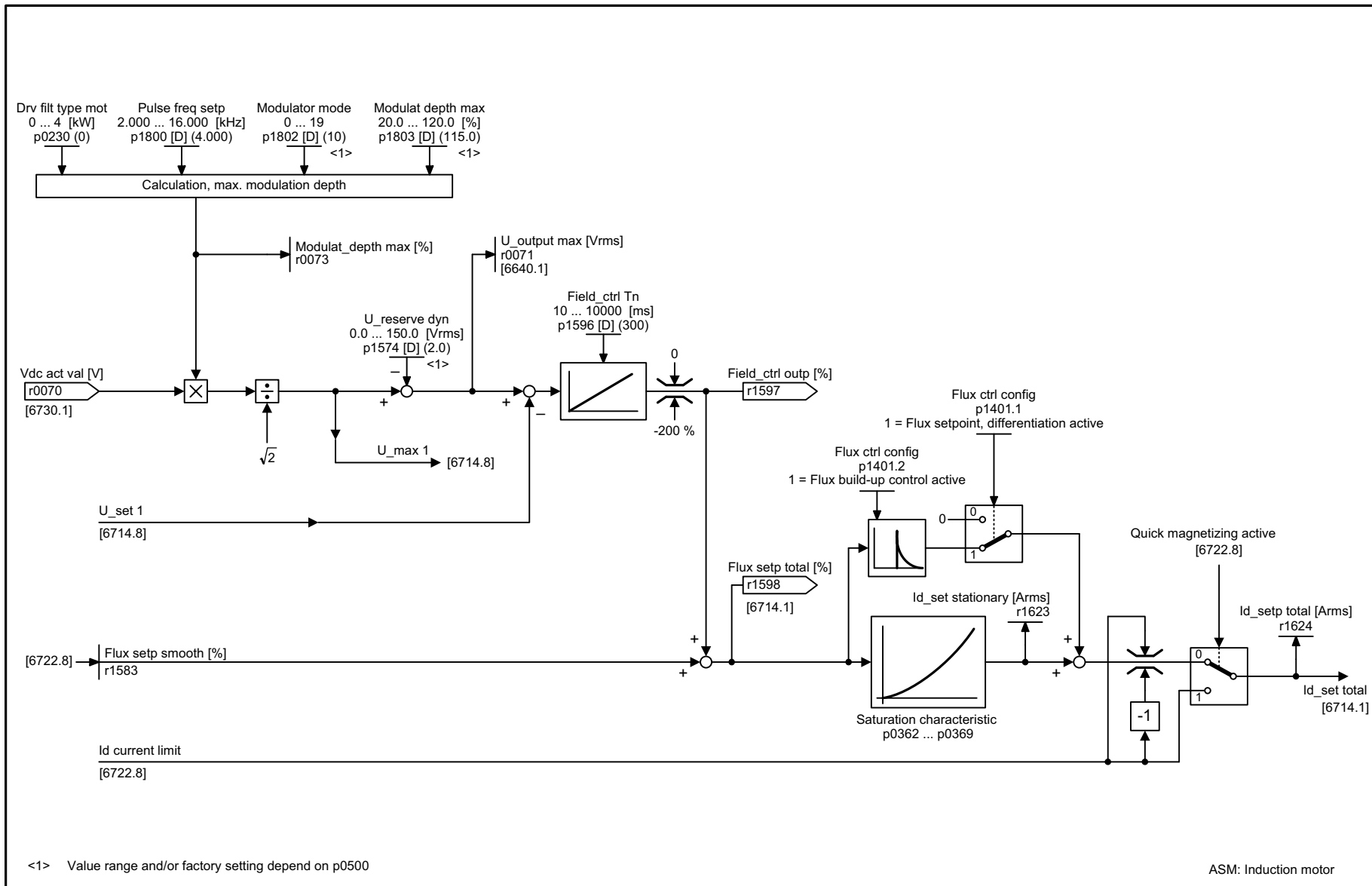


Fig. 3-104 6722 – Field weakening characteristic, Id setpoint (ASM, p0300 = 1)

1	2	3	4	5	6	7	8
Vector control					fp_6722_97_02.vsd	Function diagram	
Field weakening characteristic, Id setpoint (ASM, p0300 = 1)					07.04.2014 V4.7	G120 CU240B/E-2	
- 6722 -							



1	2	3	4	5	6	7	8
Vector control					fp_6723_97_53.vsd	Function diagram	
Field weakening controller, flux controller (ASM, p0300 = 1)					07.04.2014 V4.7	G120 CU240B/E-2	
							- 6723 -

Fig. 3-105 6723 – Field weakening controller, flux controller (ASM, p0300 = 1)

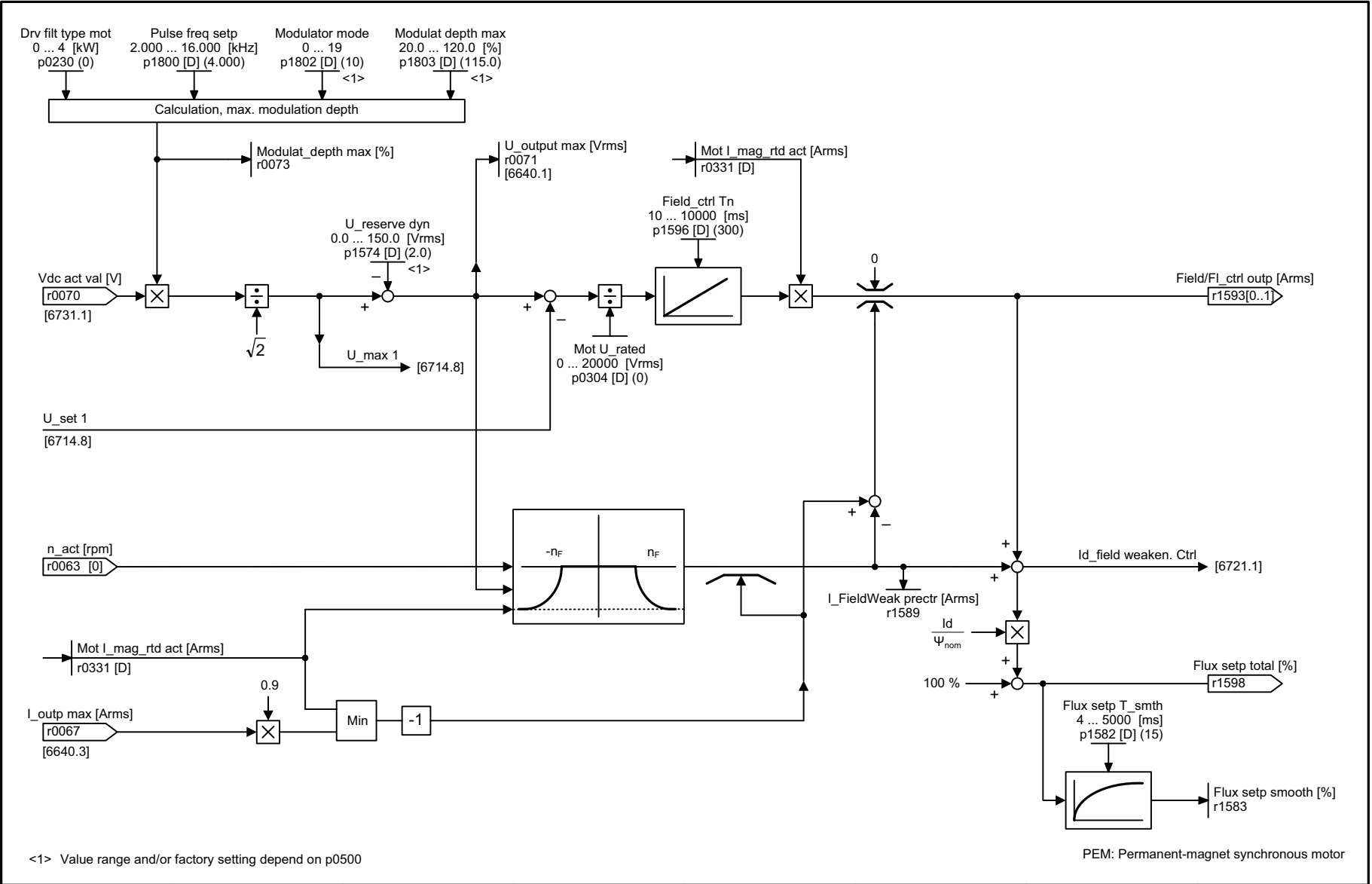
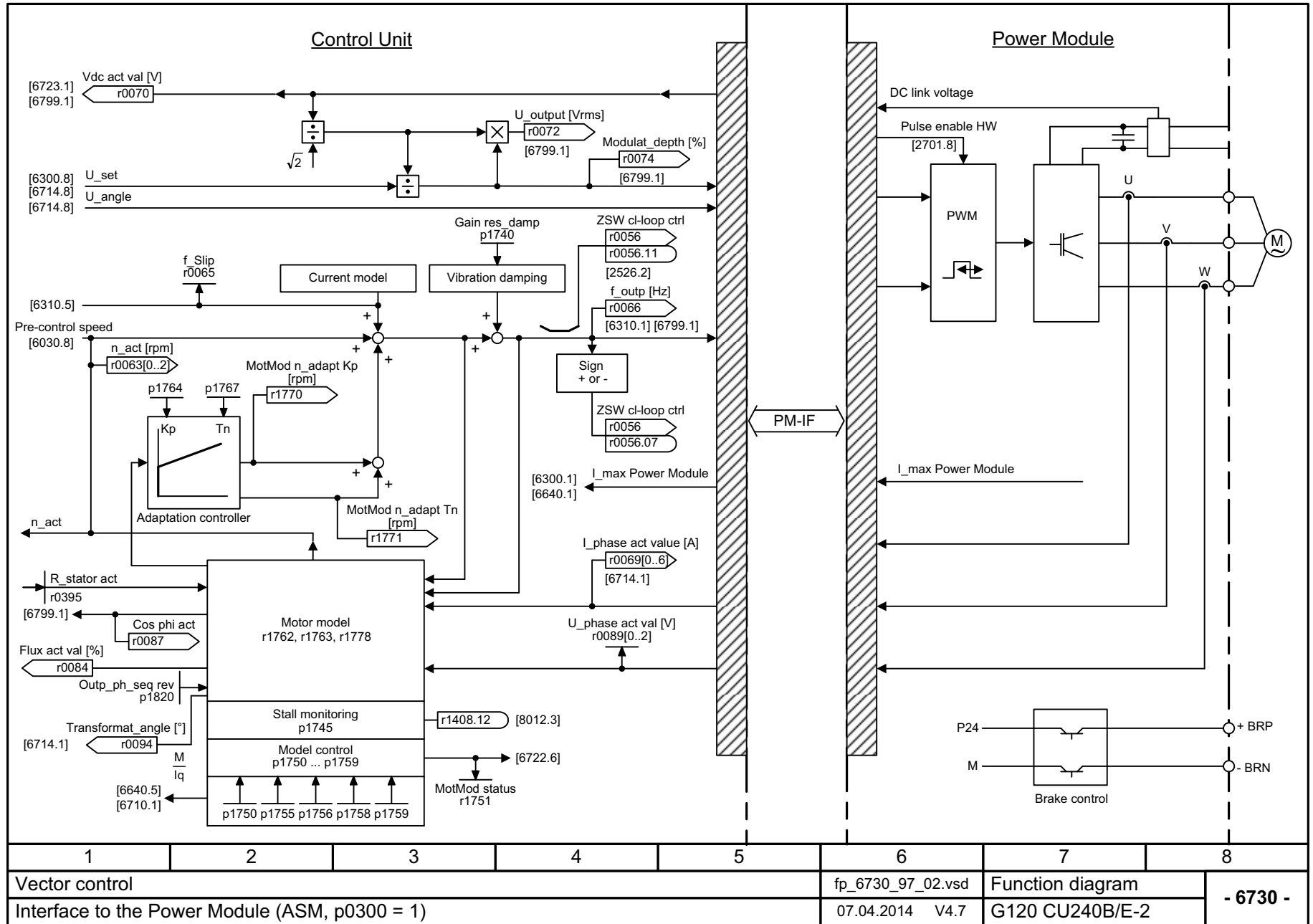


Fig. 3-106 6724 – Field weakening controller (PEM, p0300 = 2xx)

1	2	3	4	5	6	7	8
Vector control					fp_6724_97_53.vsd	Function diagram	
Field weakening controller (PEM, p0300 = 2xx)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 6724 -</b>



Fig. 3-107 6730 – Interface to the Power Module (ASM, p0300 = 1)



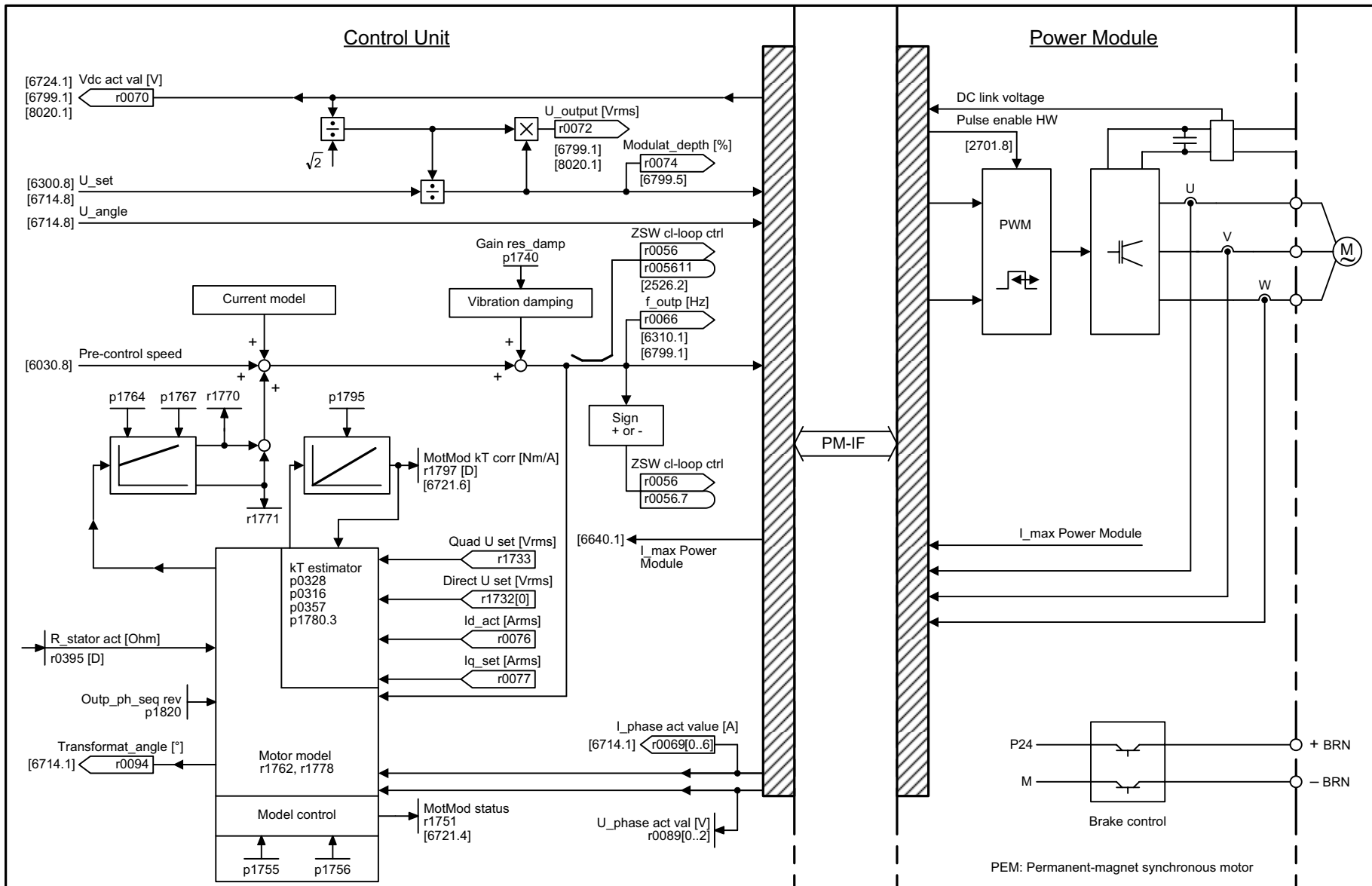
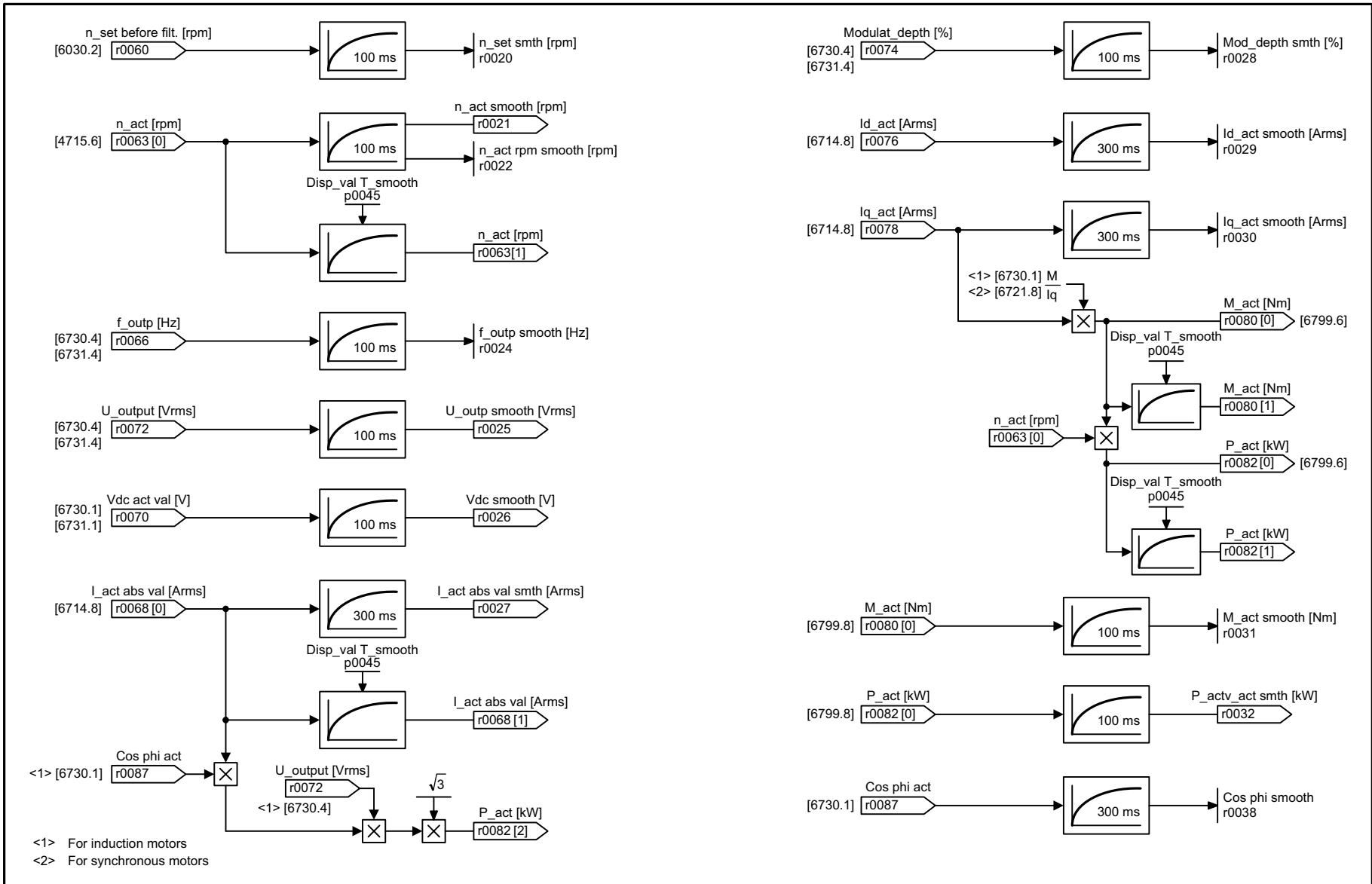


Fig. 3-108 6731 – Interface to the Power Module (PEM, p0300 = 2xx)

1	2	3	4	5	6	7	8
Vector control					fp_6731_97_02.vsd	Function diagram	
Interface to the Power Module (PEM, p0300 = 2xx)					07.04.2014 V4.7	G120 CU240B/E-2	

Fig. 3-109 6799 – Display signals



1	2	3	4	5	6	7	8
Vector control					fp_6799_97_66.vsd	Function diagram	
Display signals					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 6799 -</b>

## 3.14 Technology functions

### Function diagrams

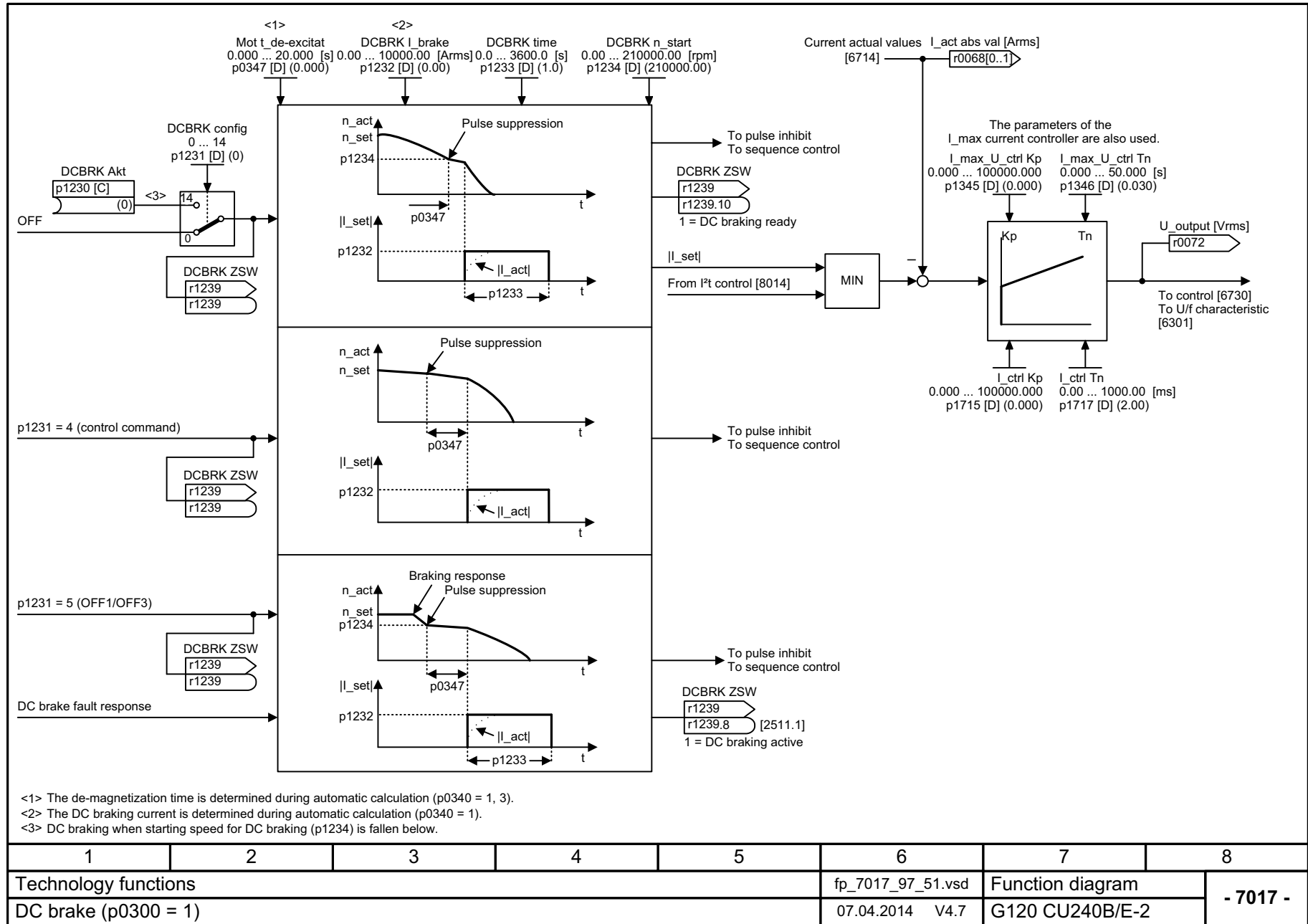
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7017 – DC brake (p0300 = 1)

637

---

Fig. 3-110 7017 – DC brake (p0300 = 1)



## 3.15 Free function blocks

### Function diagrams

7200 – Sampling times of the runtime groups	639
7210 – AND (AND function blocks with 4 inputs)	640
7212 – OR (OR function blocks with 4 inputs)	641
7214 – XOR (XOR function blocks with 4 inputs)	642
7216 – NOT (inverter)	643
7220 – ADD (adder with 4 inputs), SUB (subtractor)	644
7222 – MUL (multiplier), DIV (divider)	645
7224 – AVA (absolute value generator)	646
7225 – NCM (numeric comparator)	647
7226 – PLI (polyline scaling)	648
7230 – MFP (pulse generator), PCL (pulse contractor)	649
7232 – PDE (ON delay)	650
7233 – PDF (OFF delay)	651
7234 – PST (pulse stretcher)	652
7240 – RSR (RS flip-flop), DFR (D flip-flop)	653
7250 – BSW (binary change-over switch), NSW (numeric change-over switch)	654
7260 – LIM (limiter)	655
7262 – PT1 (smoothing element)	656
7264 – INT (integrator), DIF (derivative-action element)	657
7270 – LVM (double-sided limit monitor with hysteresis)	658

	Run-time group						RTG sampling time [ms] r20001[0..9]
	1	2	3	4	5	6	
	r20001[1] = 8 ms	r20001[2] = 16 ms	r20001[3] = 32 ms	r20001[4] = 64 ms	r20001[5] = 128 ms	r20001[6] = 256 ms	
Logic function blocks AND, OR, XOR, NOT	X	X	X	X	X	X	
Arithmetic function blocks ADD, SUB, MUL, DIV, AVA, NCM, PLI	-	-	-	-	X	X	
Time function blocks MFP, PCL, PDE, PDF, PST	-	-	-	-	X	X	
Memory function blocks RSR, DSR	X	X	X	X	X	X	
Switch function block NSW	-	-	-	-	X	X	
Switch function block BSW	X	X	X	X	X	X	
Control function blocks LIM, PT1, INT, DIF	-	-	-	-	X	X	
Complex function blocks LVM	-	-	-	-	X	X	

1	2	3	4	5	6	7	8
Free function blocks					fp_7200_97_51.vsd	Function diagram	
Sampling times of the runtime groups					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 7200 -</b>

Fig. 3-111 7200 – Sampling times of the runtime groups

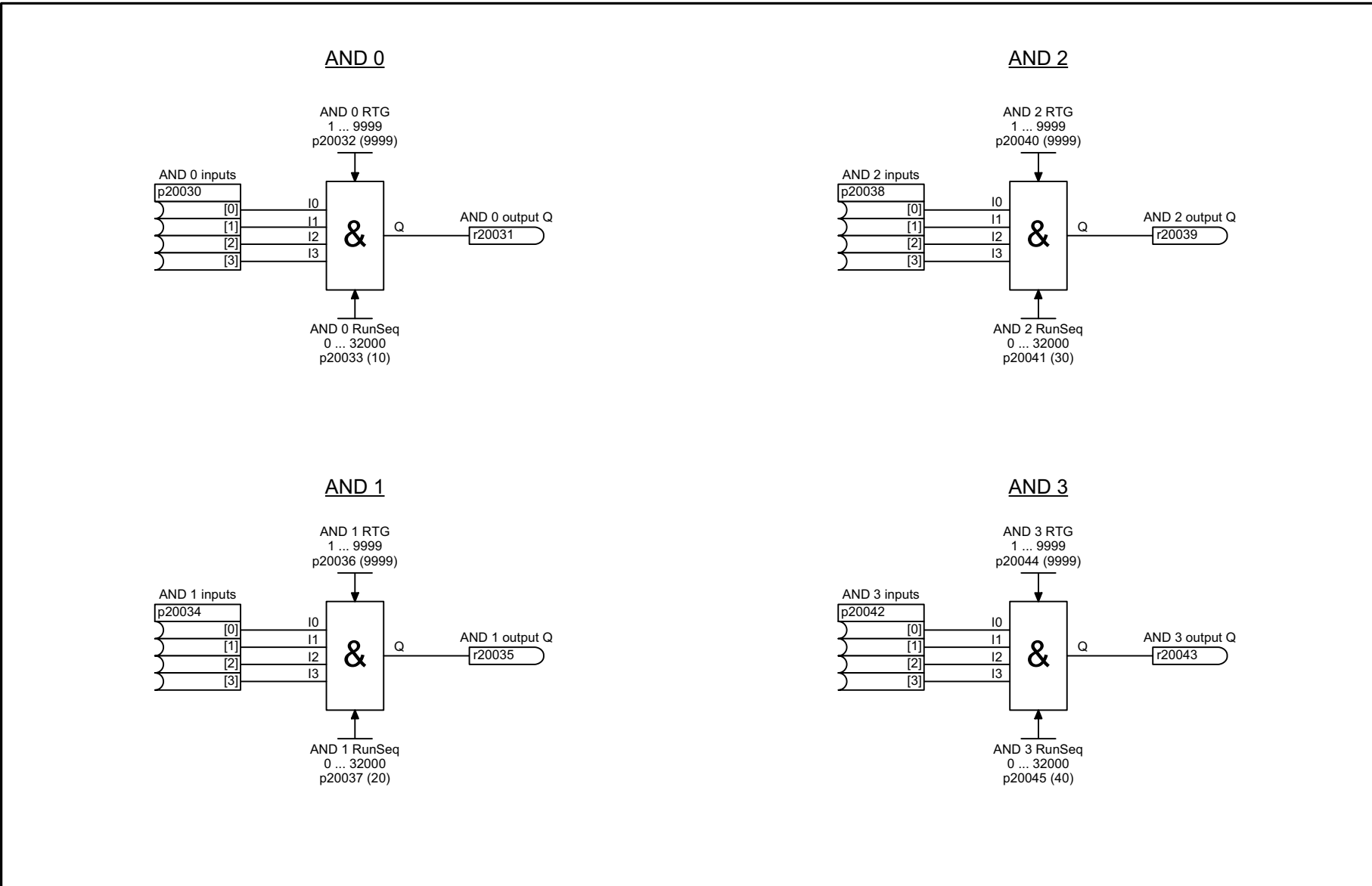


Fig. 3-112 7210 – AND (AND function blocks with 4 inputs)

1	2	3	4	5	6	7	8
Free function blocks - Logic function blocks					fp_7210_97_51.vsd	Function diagram	
AND (AND function blocks with 4 inputs)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 7210 -</b>



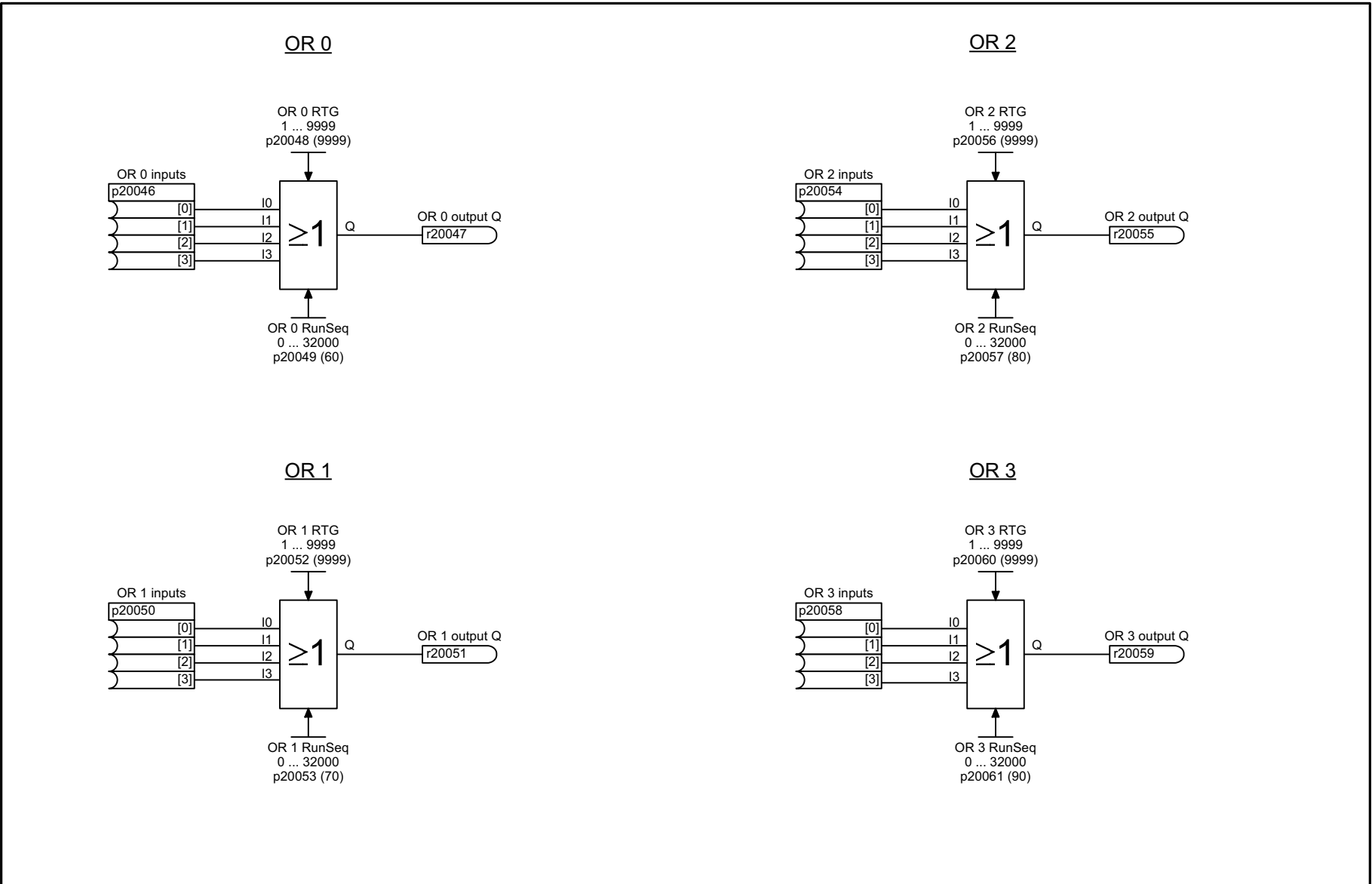


Fig. 3-113 7212 – OR (OR function blocks with 4 inputs)

1	2	3	4	5	6	7	8
Free function blocks - Logic function blocks					fp_7212_97_51.vsd	Function diagram	
OR (OR function blocks with 4 inputs)					07.04.2014 V4.7	G120 CU240B/E-2	
							- 7212 -

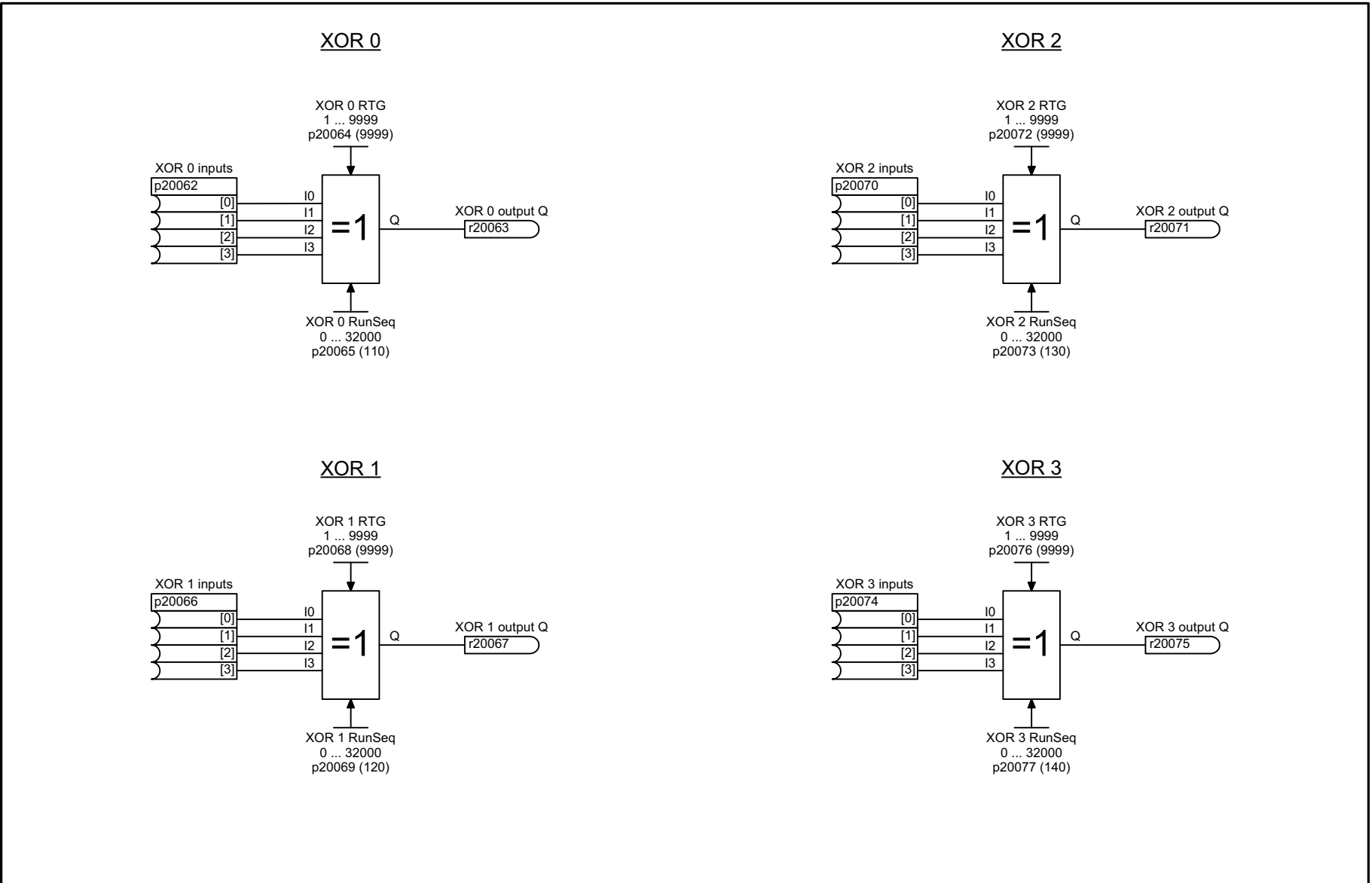
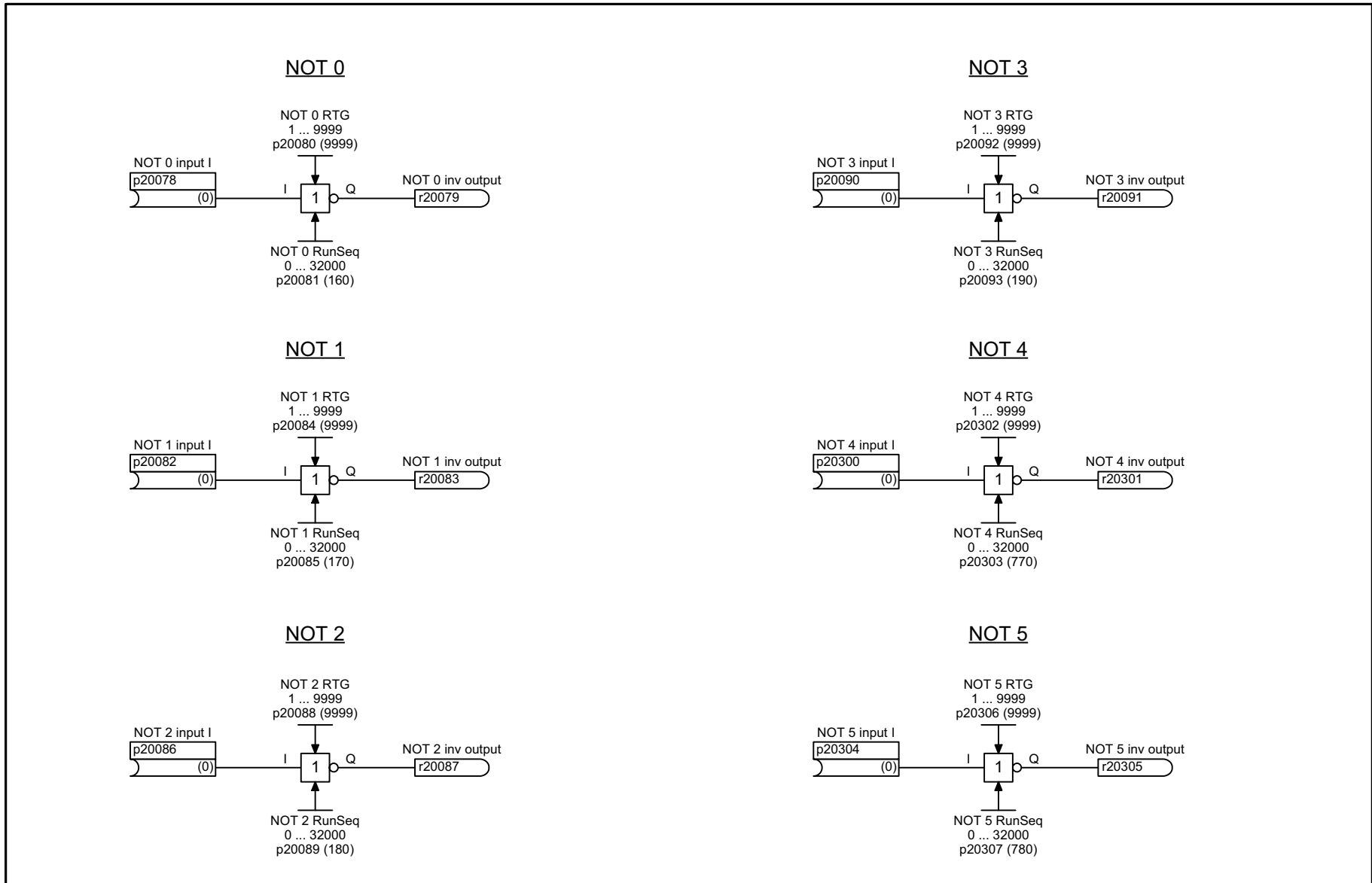


Fig. 3-114 7214 – XOR (XOR function blocks with 4 inputs)

1	2	3	4	5	6	7	8
Free function blocks - Logic function blocks					fp_7214_97_51.vsd	Function diagram	
XOR (XOR function blocks with 4 inputs)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 7214 -</b>

Fig. 3-115 7216 – NOT (inverter)



1	2	3	4	5	6	7	8
Free function blocks - Logic function blocks					fp_7216_97_51.vsd	Function diagram	
NOT (inverter)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 7216 -</b>

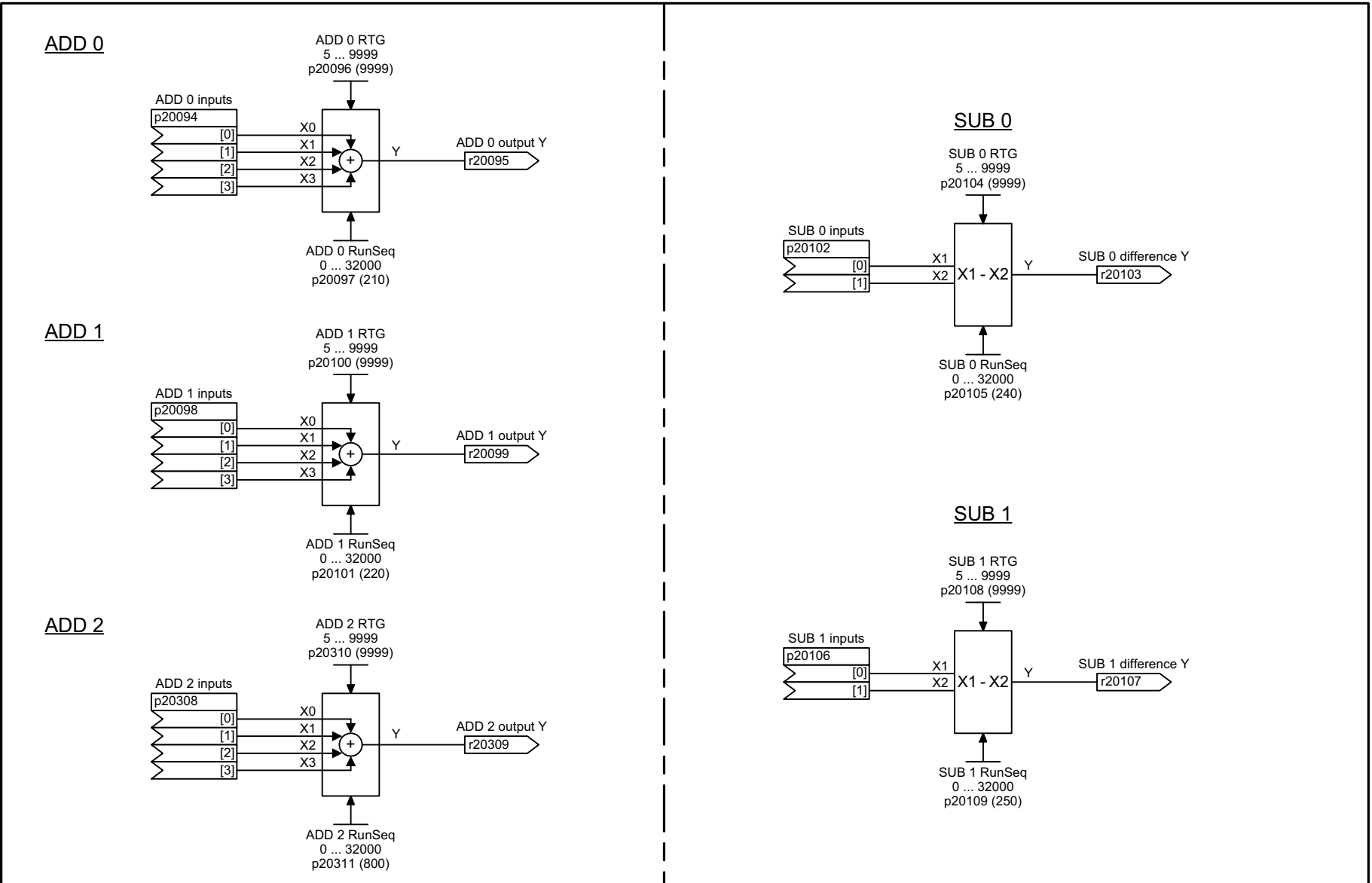
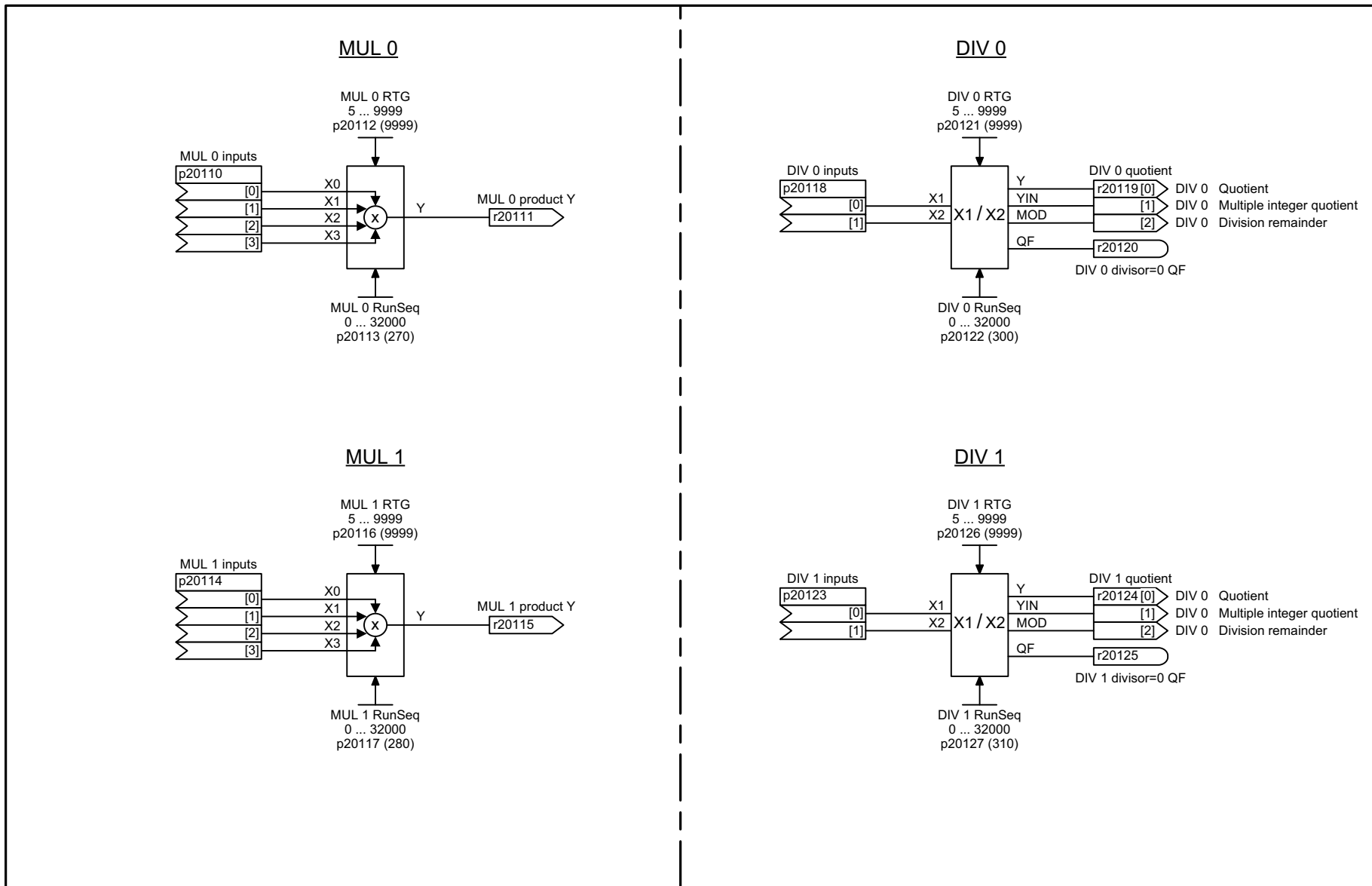


Fig. 3-116 7220 – ADD (adder with 4 inputs), SUB (subtractor)

1	2	3	4	5	6	7	8
Free function blocks - Arithmetic function blocks					fp_7220_97_51.vsd	Function diagram	
ADD (adder with 4 inputs), SUB (subtractor)					07.04.2014 V4.7	G120 CU240B/E-2	



1	2	3	4	5	6	7	8
Free function blocks - Arithmetic function blocks					fp_7222_97_51.vsd	Function diagram	
MUL (multiplier), DIV (divider)					07.04.2014 V4.7	G120 CU240B/E-2	

- 7222 -

Fig. 3-117 7222 – MUL (multiplier), DIV (divider)

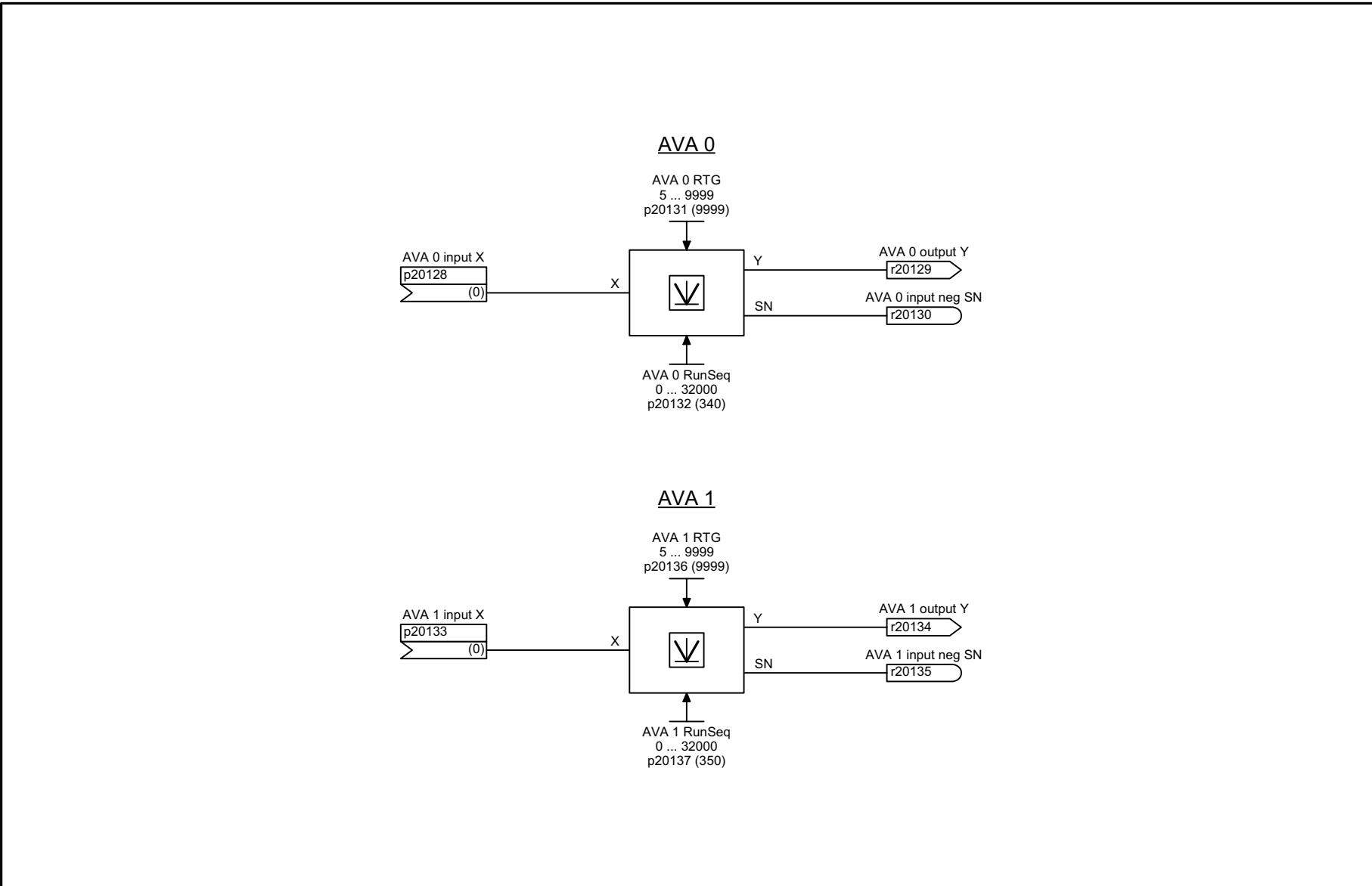
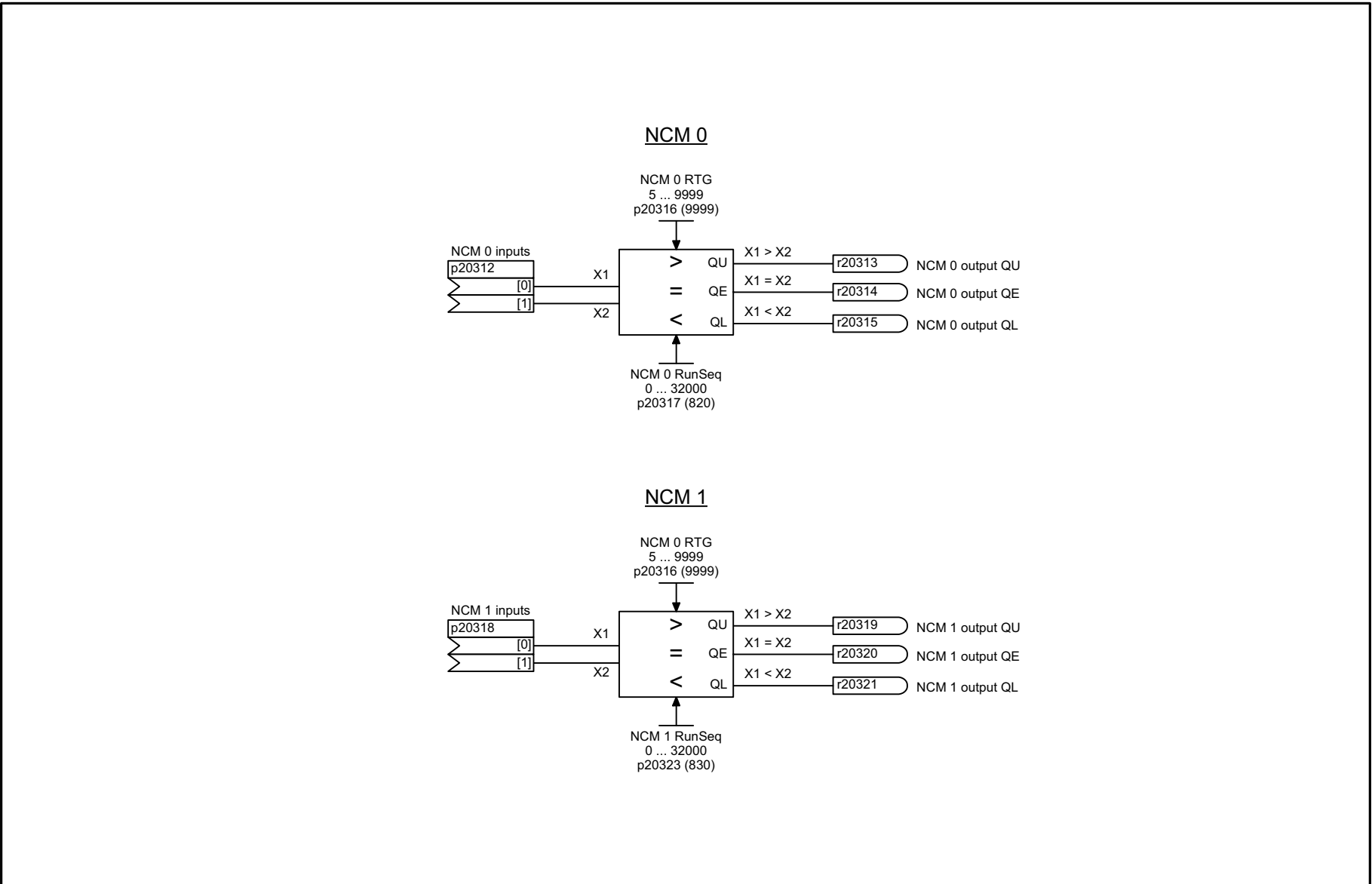


Fig. 3-118 7224 – AVA (absolute value generator)

1	2	3	4	5	6	7	8
Free function blocks - Arithmetic function blocks					fp_7224_97_51.vsd	Function diagram	
AVA (absolute value generator)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 7224 -</b>



1	2	3	4	5	6	7	8
Free function blocks - Arithmetic function blocks					fp_7225_97_51.vsd	Function diagram	
NCM (numeric comparator)					07.04.2014 V4.7	G120 CU240B/E-2	

- 7225 -

Fig. 3-119 7225 – NCM (numeric comparator)

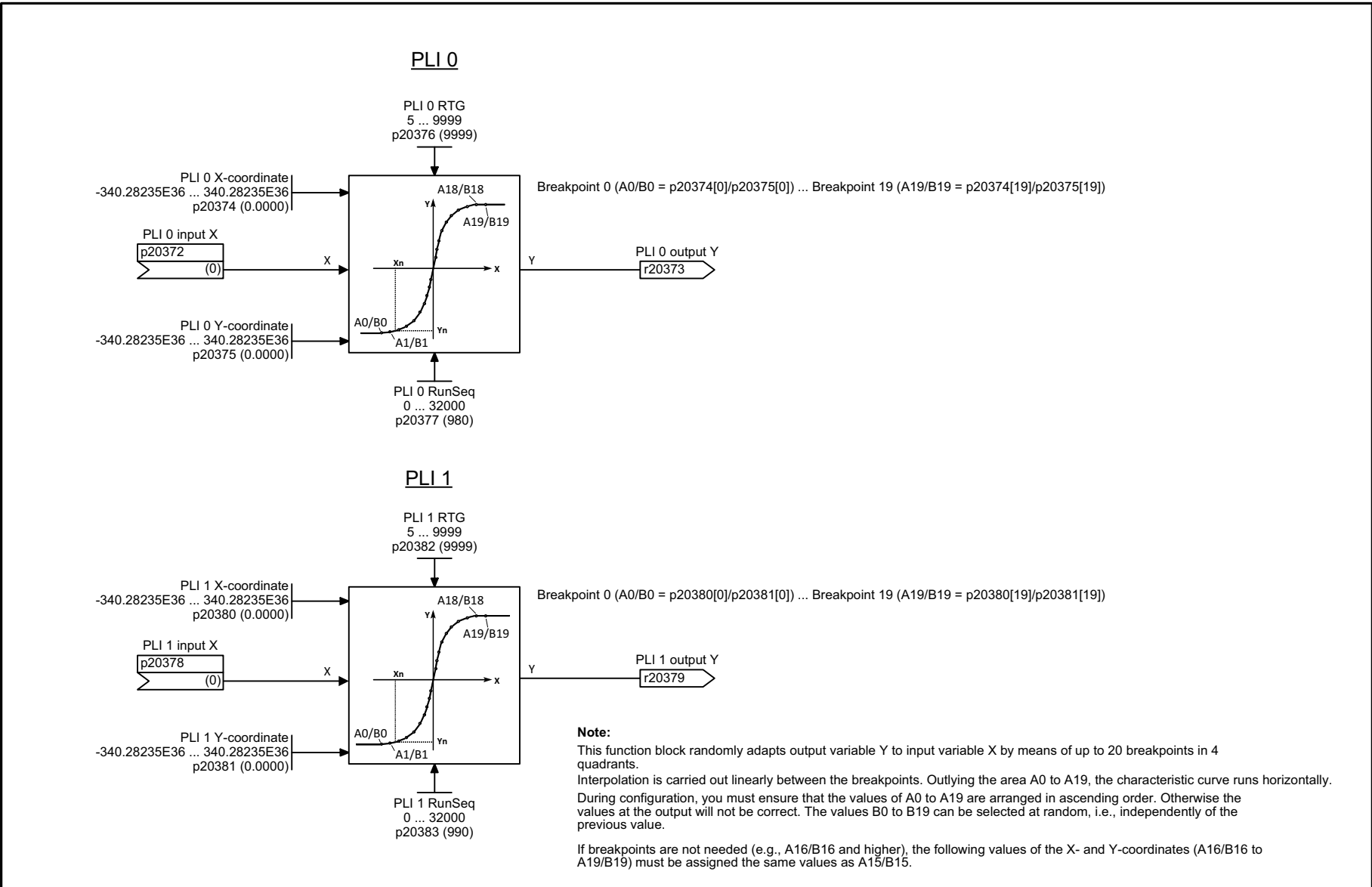
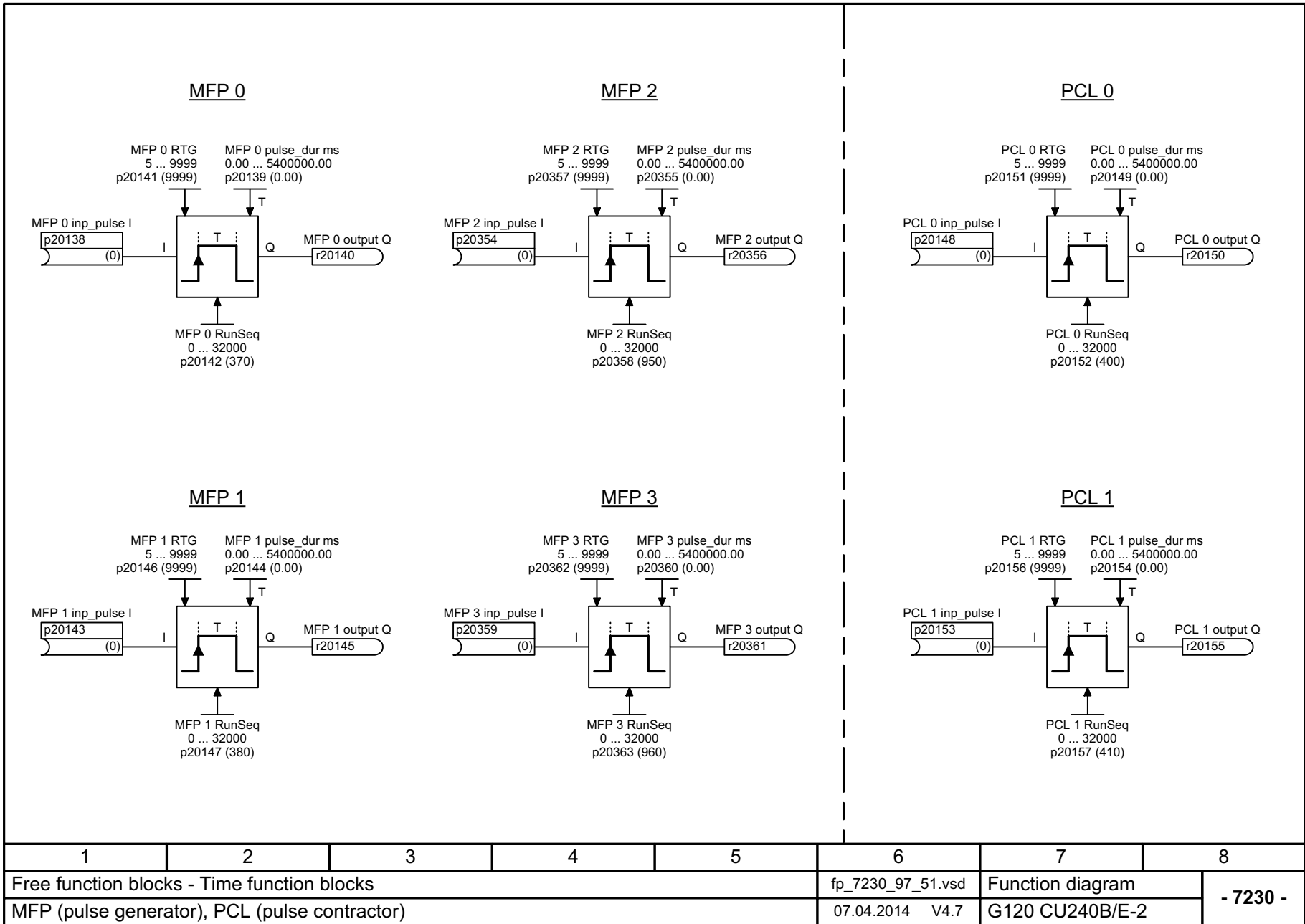


Fig. 3-120 7226 – PLI (polyline scaling)

1	2	3	4	5	6	7	8
Free function blocks - Arithmetic function blocks					fp_7226_97_51.vsd	Function diagram	
PLI (polyline scaling)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 7226 -</b>



Fig. 3-121 7230 – MFP (pulse generator), PCL (pulse contractor)



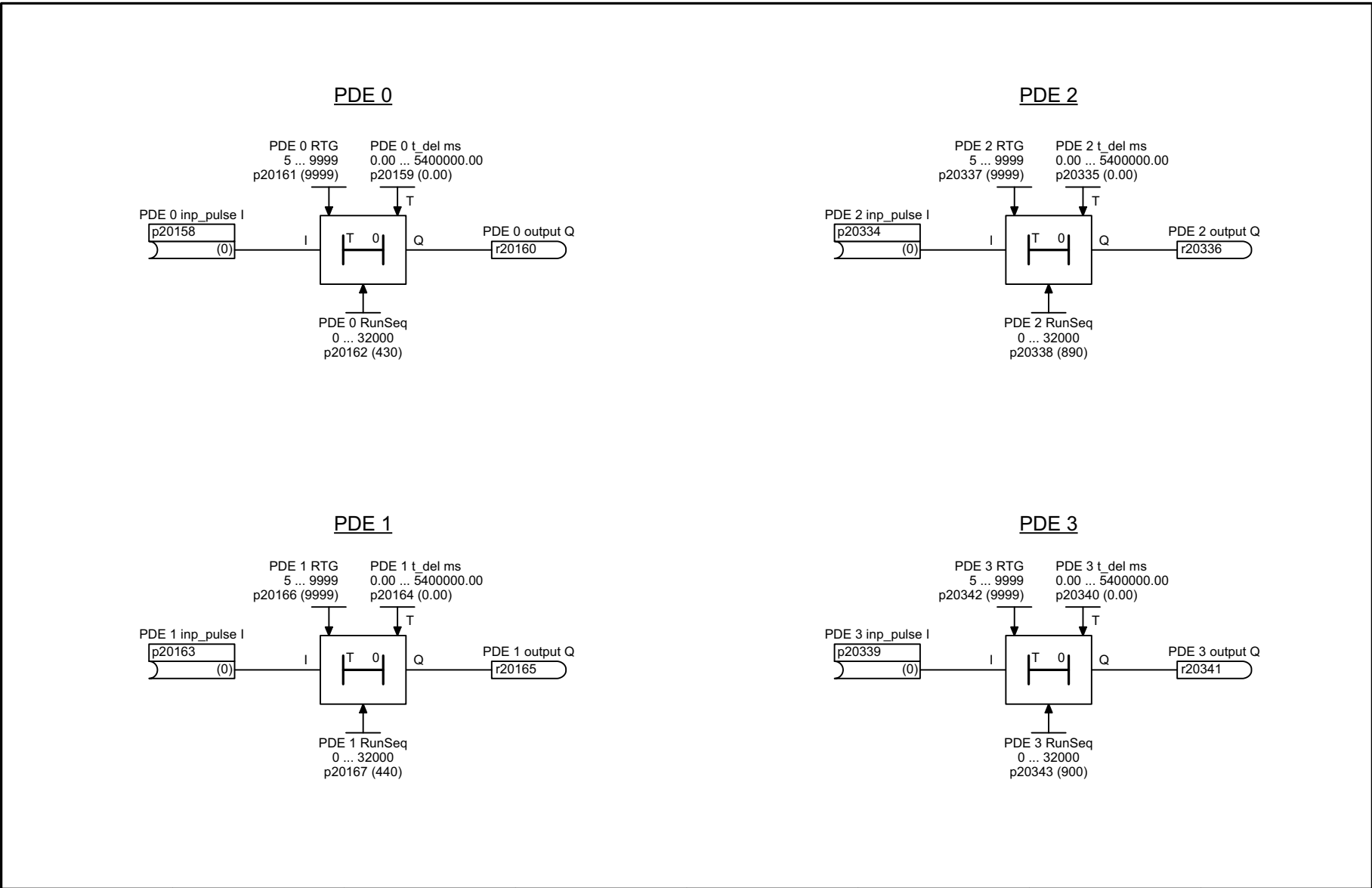


Fig. 3-122 7Z32 – PDE (ON delay)

1	2	3	4	5	6	7	8
Free function blocks - Time function blocks					fp_7232_97_51.vsd	Function diagram	
PDE (ON delay)					07.04.2014 V4.7	G120 CU240B/E-2	
							- 7232 -

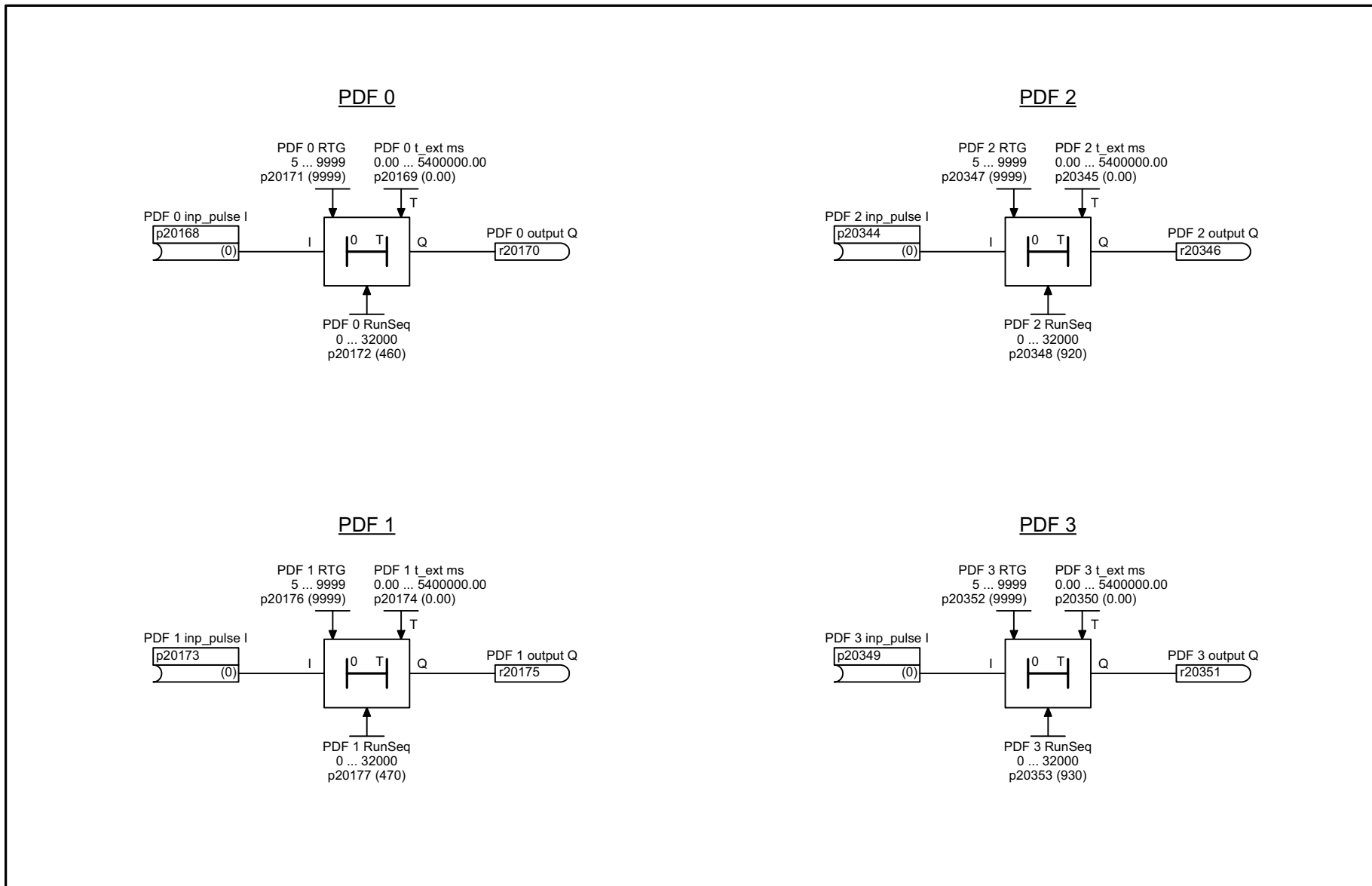


Fig. 3-123 7233 – PDF (OFF delay)

1	2	3	4	5	6	7	8
Free function blocks - Time function blocks					fp_7233_97_51.vsd	Function diagram	
PDF (OFF delay)					07.04.2014 V4.7	G120 CU240B/E-2	
							- 7233 -

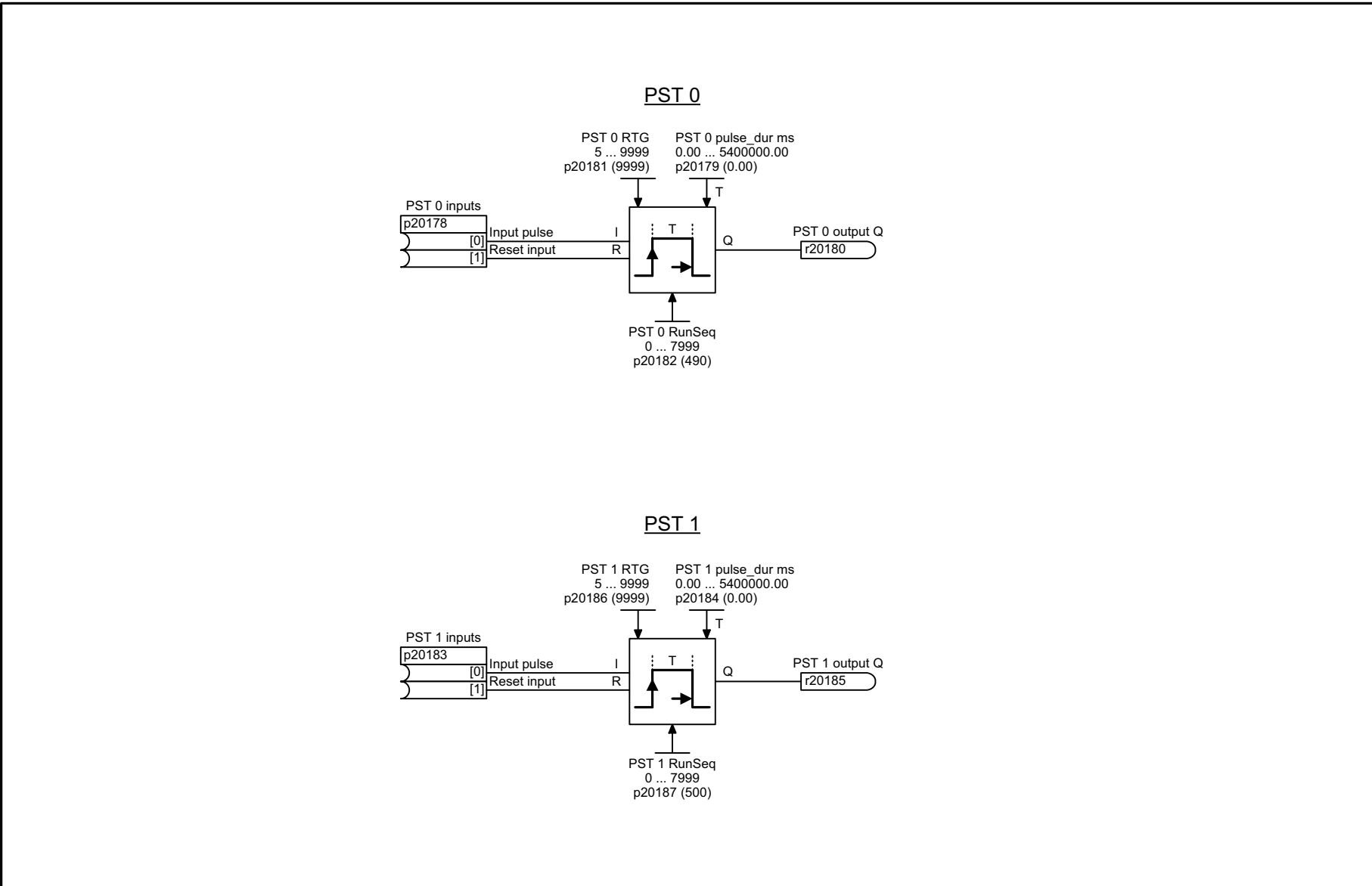
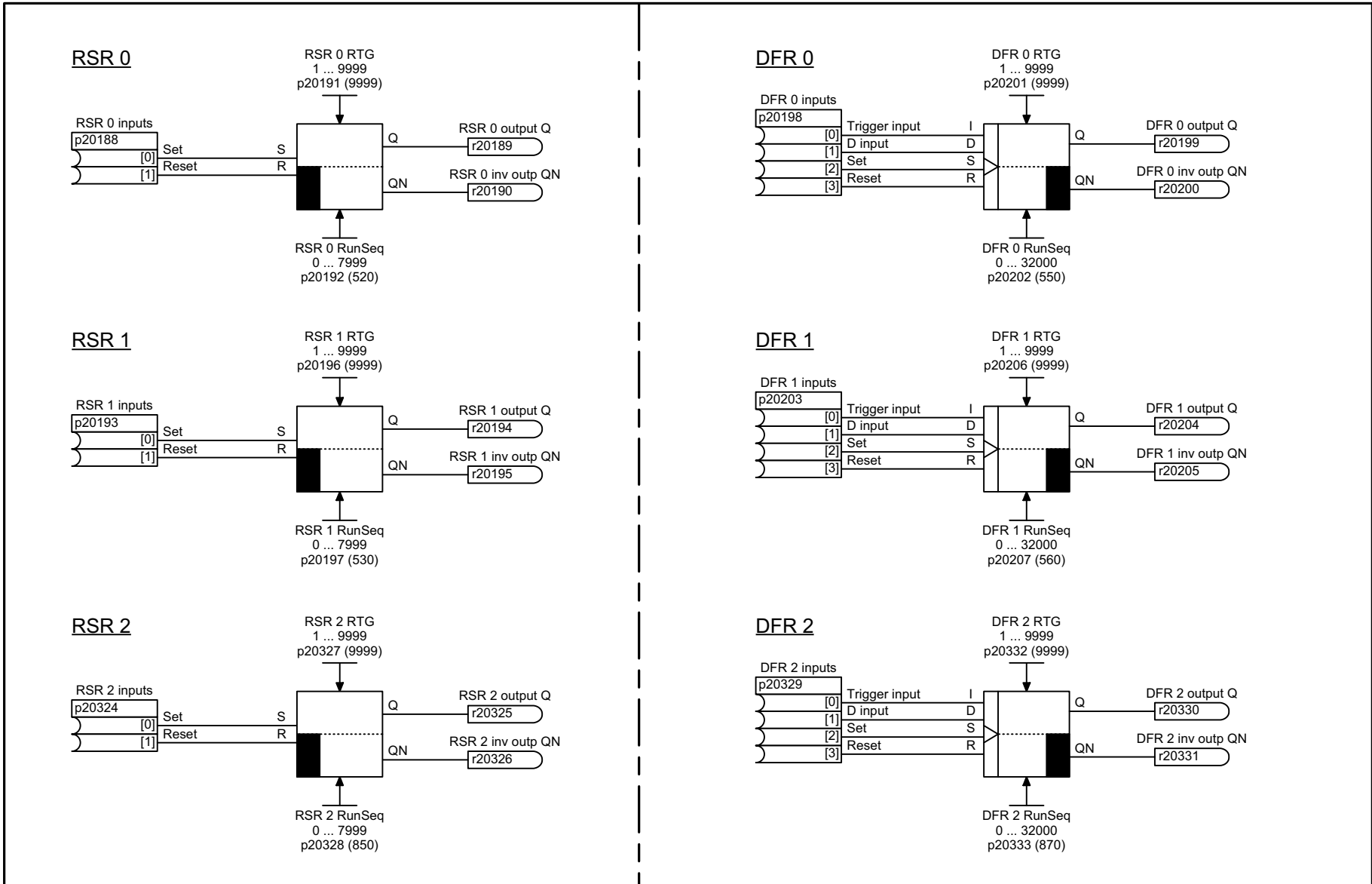


Fig. 3-124 7234 – PST (pulse stretcher)

1	2	3	4	5	6	7	8
Free function blocks - Time function blocks					fp_7234_97_51.vsd	Function diagram	
PST (pulse stretcher)					07.04.2014 V4.7	G120 CU240B/E-2	
							- 7234 -

Fig. 3-125 7240 – RSR (RS flip-flop), DFR (D flip-flop)



1	2	3	4	5	6	7	8
Free function blocks - Flipflop function blocks					fp_7240_97_51.vsd	Function diagram	
RSR (RS flip-flop), DFR (D flip-flop)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 7240 -</b>

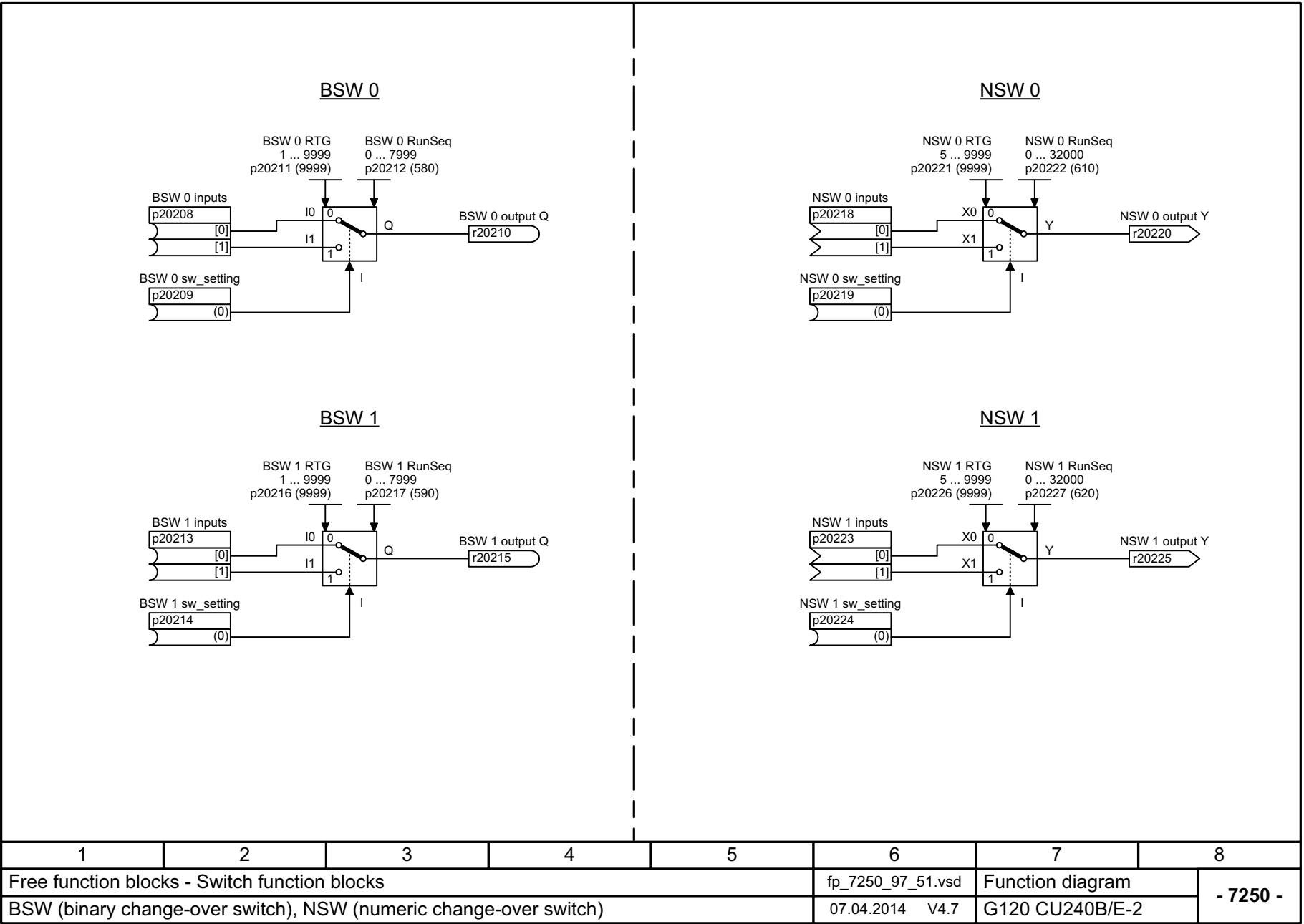
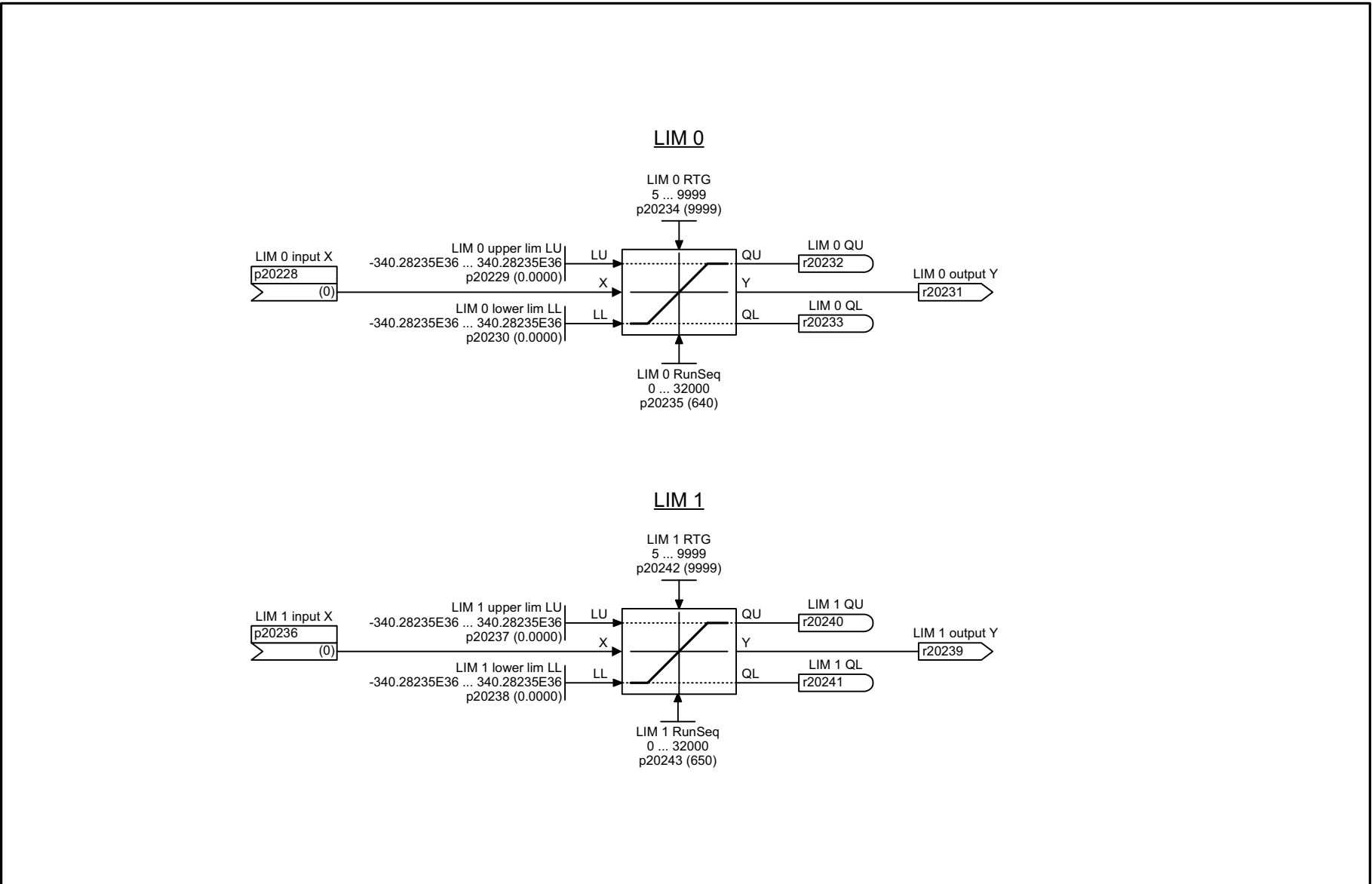


Fig. 3-126 7250 – BSW (binary change-over switch), NSW (numeric change-over switch)

1	2	3	4	5	6	7	8
Free function blocks - Switch function blocks					fp_7250_97_51.vsd	Function diagram	
BSW (binary change-over switch), NSW (numeric change-over switch)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 7250 -</b>



1	2	3	4	5	6	7	8
Free function blocks - Control function blocks					fp_7260_97_51.vsd	Function diagram	
LIM (limiter)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 7260 -</b>

Fig. 3-127 7260 – LIM (limiter)

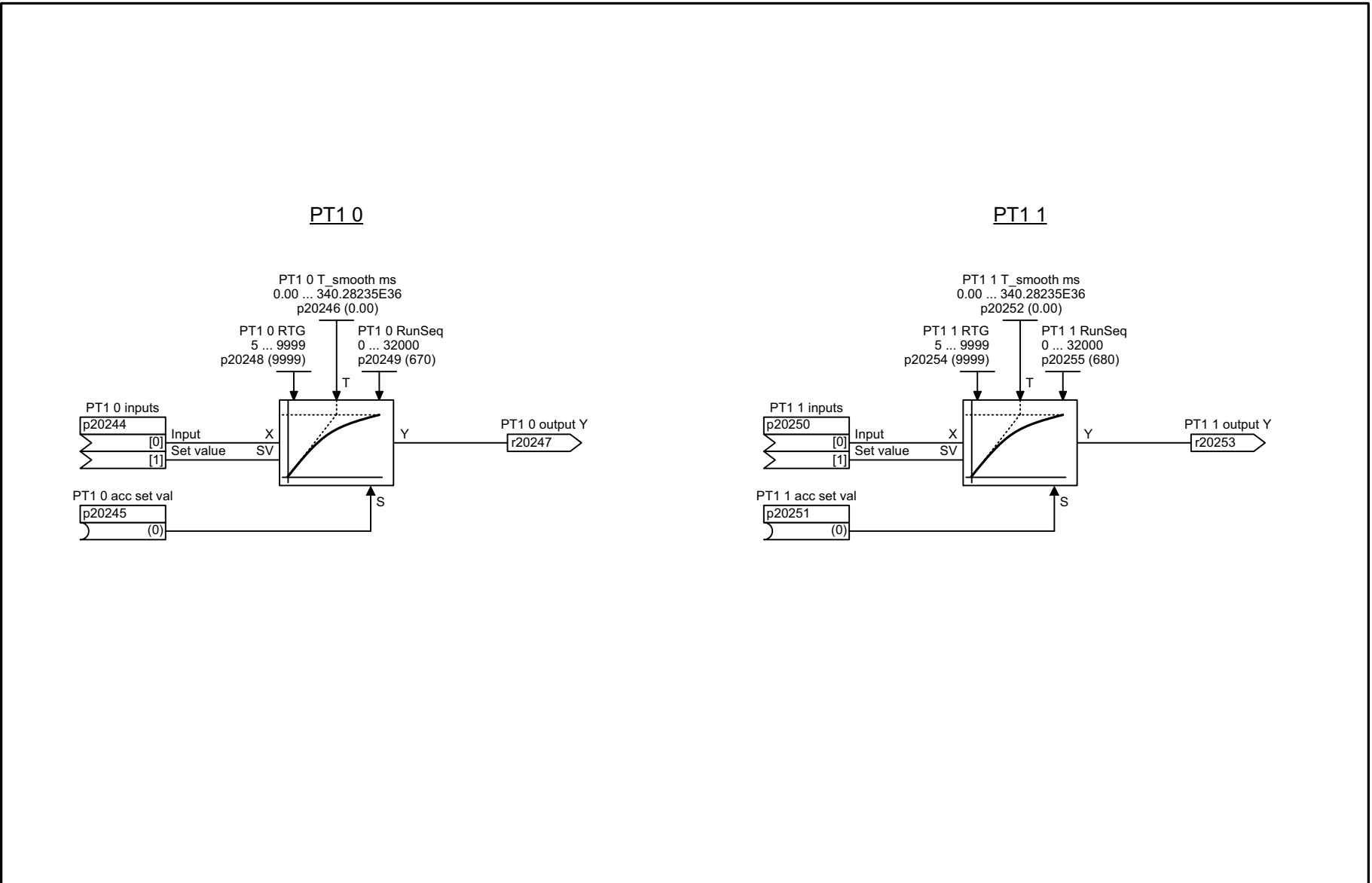


Fig. 3-128 7262 – PT1 (smoothing element)

1	2	3	4	5	6	7	8
Free function blocks - Control function blocks					fp_7262_97_51.vsd	Function diagram	
PT1 (smoothing element)					07.04.2014 V4.7	G120 CU240B/E-2	

- 7262 -



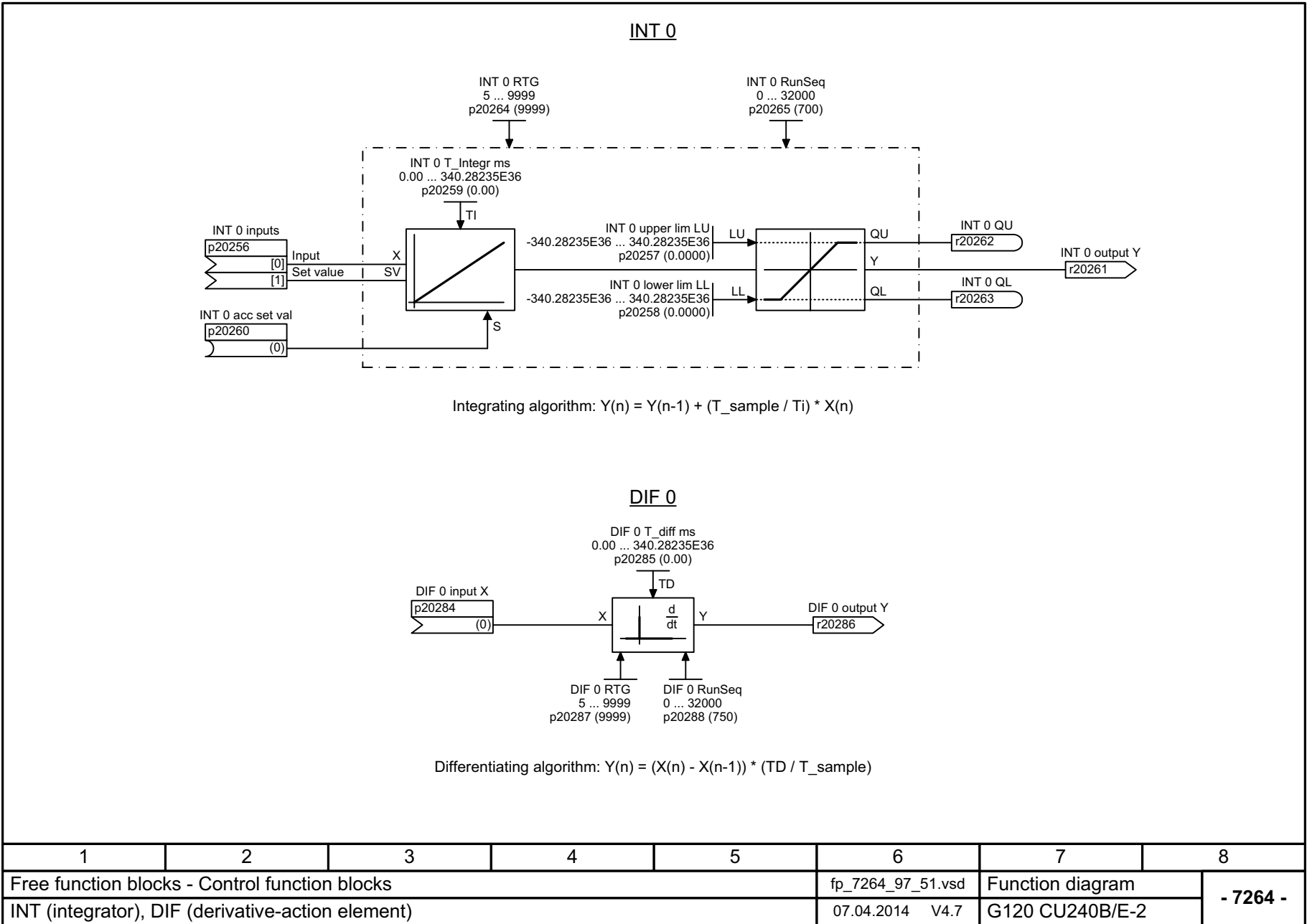


Fig. 3-129 7264 – INT (integrator), DIF (derivative-action element)

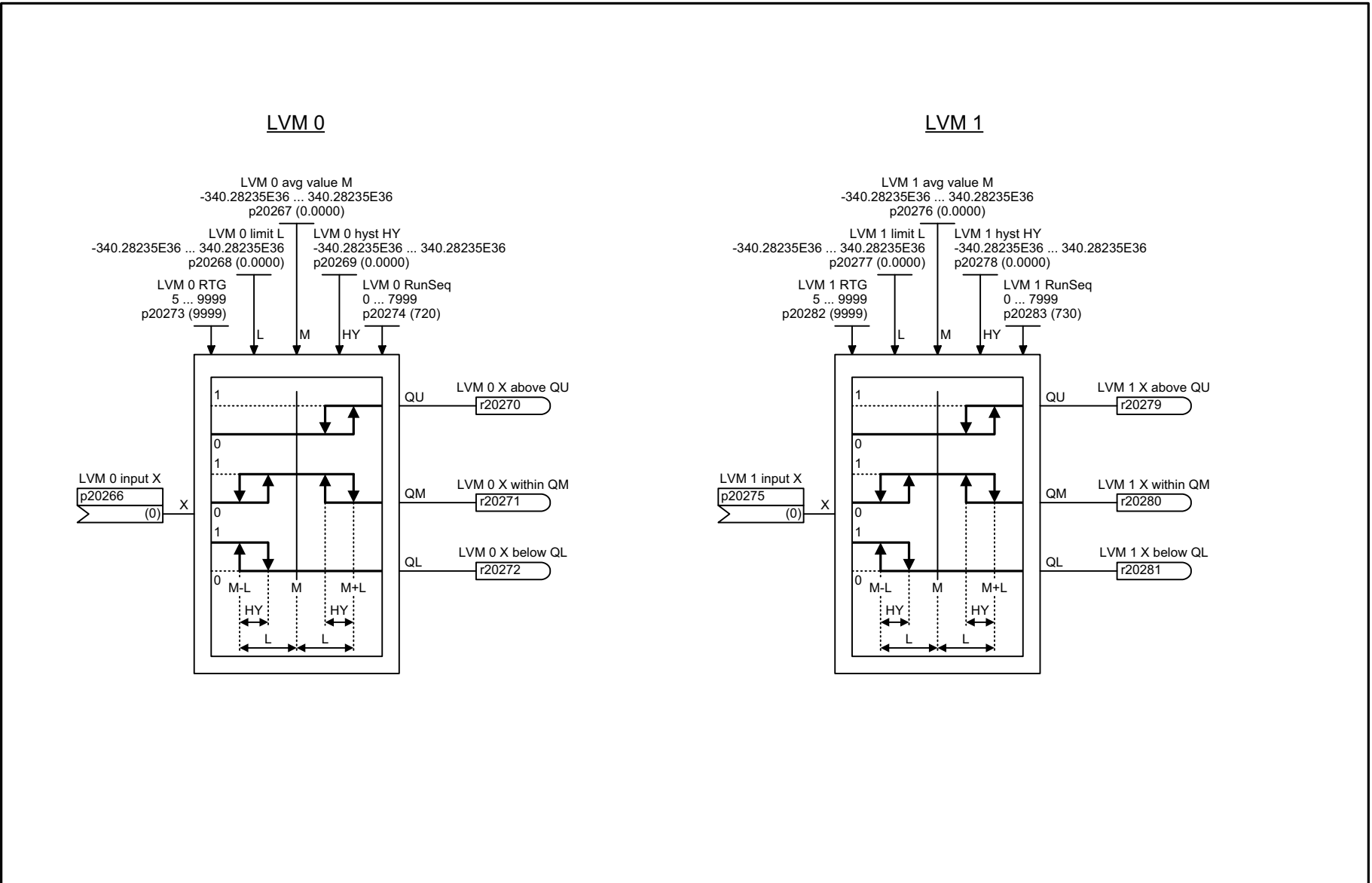


Fig. 3-130 7270 – LVM (double-sided limit monitor with hysteresis)

1	2	3	4	5	6	7	8
Free function blocks - Complex function blocks					fp_7270_97_51.vsd	Function diagram	
LVM (double-sided limit monitor with hysteresis)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 7270 -</b>

## 3.16 Technology controller

### Function diagrams

7950 – Fixed value selection binary (p2216 = 2)	660
7951 – Fixed value selection direct (p2216 = 1)	661
7954 – Motorized potentiometer	662
7958 – Closed-loop control	663

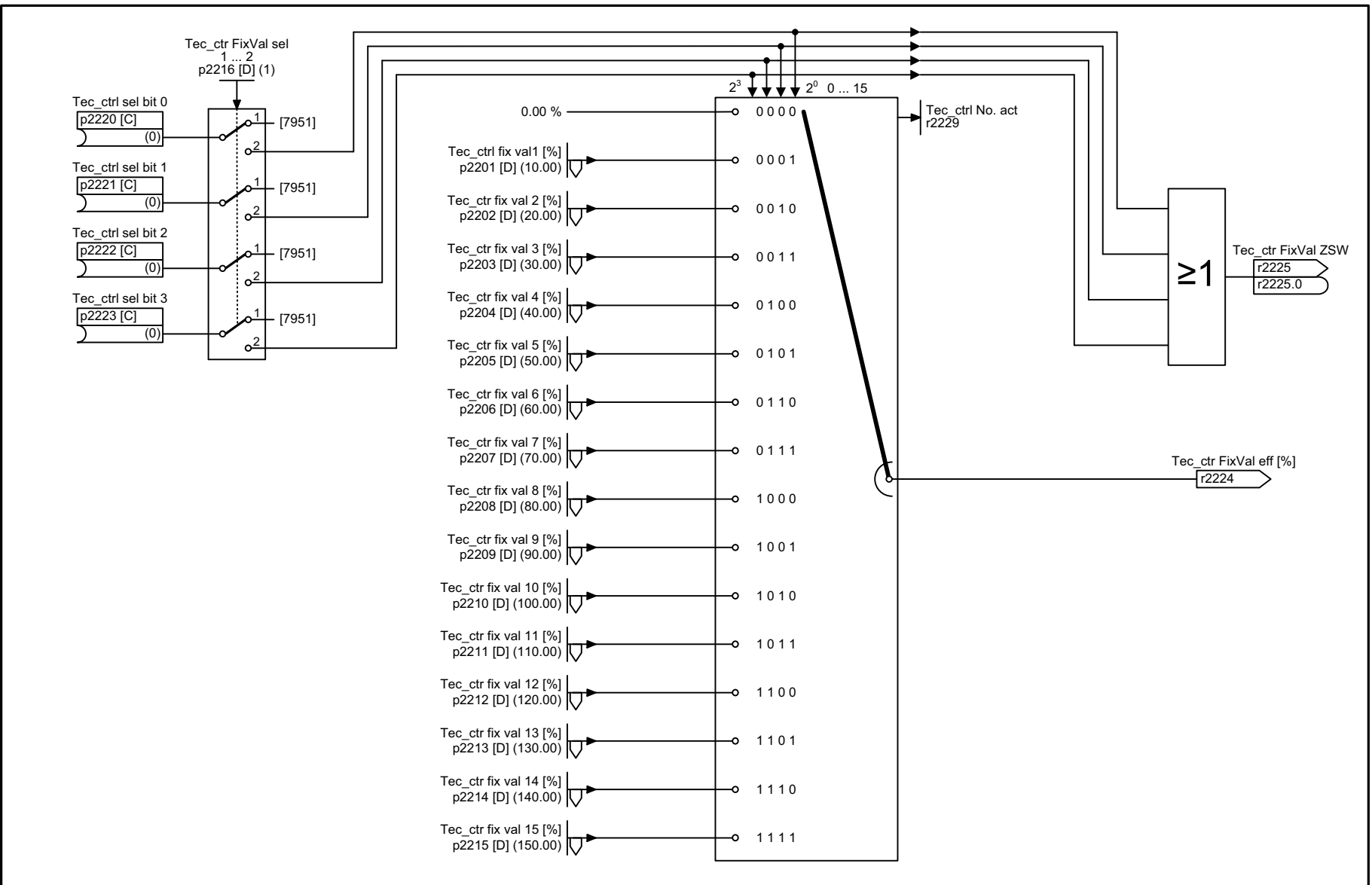


Fig. 3-131 7950 – Fixed value selection binary (p2216 = 2)

1	2	3	4	5	6	7	8
Technology controller					fp_7950_97_51.vsd	Function diagram	
Fixed value selection binary (p2216 = 2)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 7950 -</b>

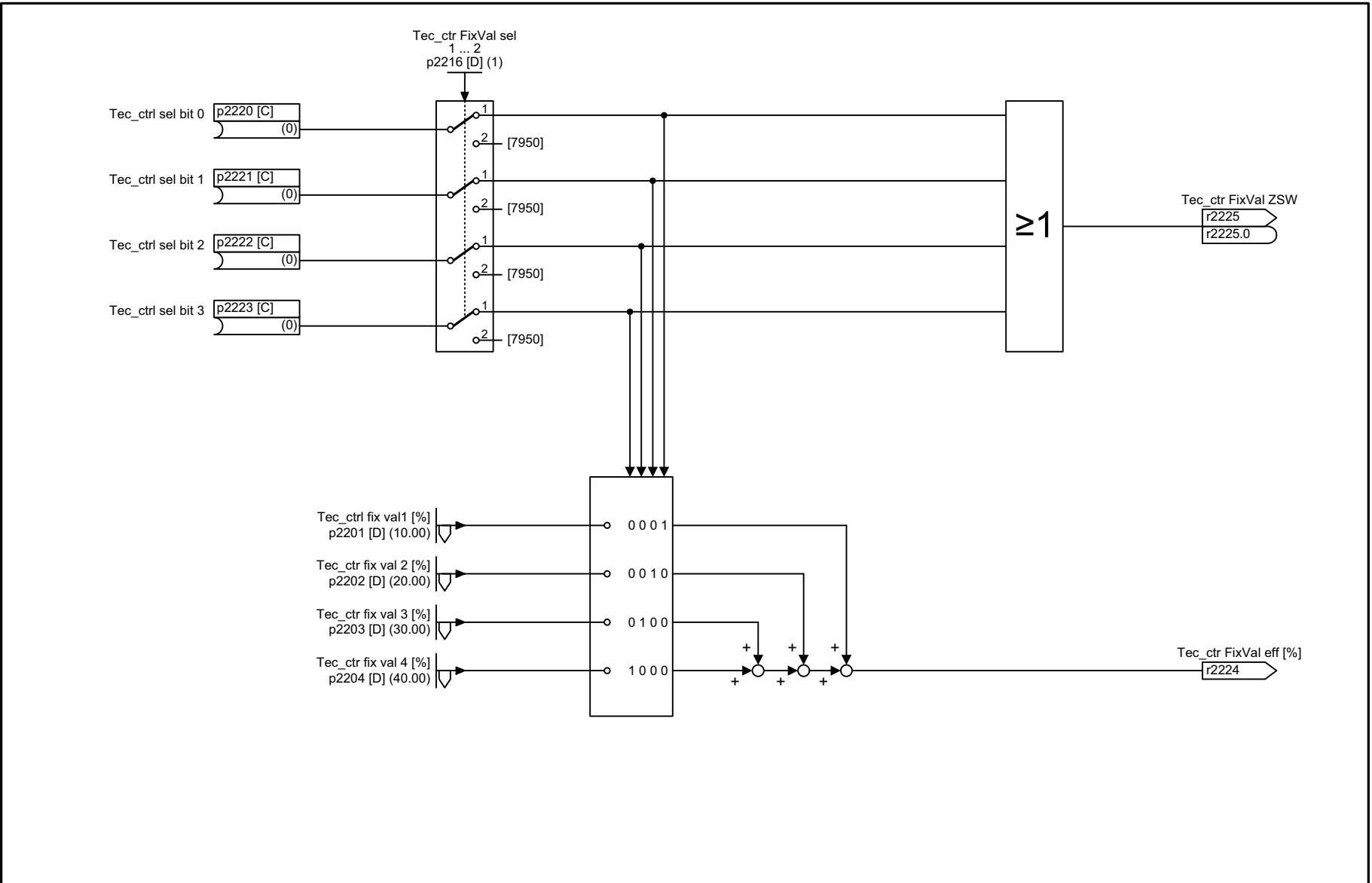
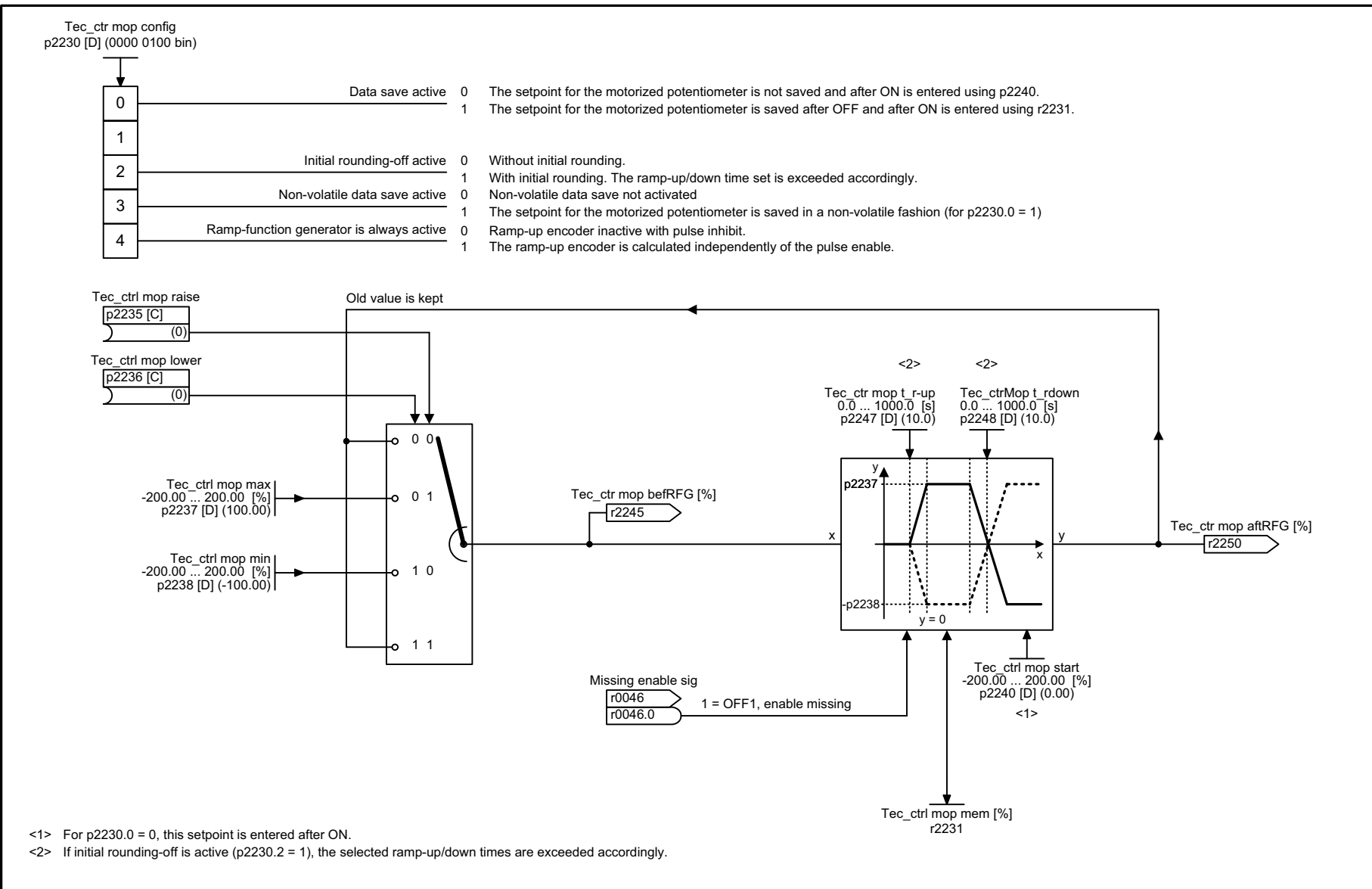


Fig. 3-132 7951 – Fixed value selection direct (p2216 = 1)

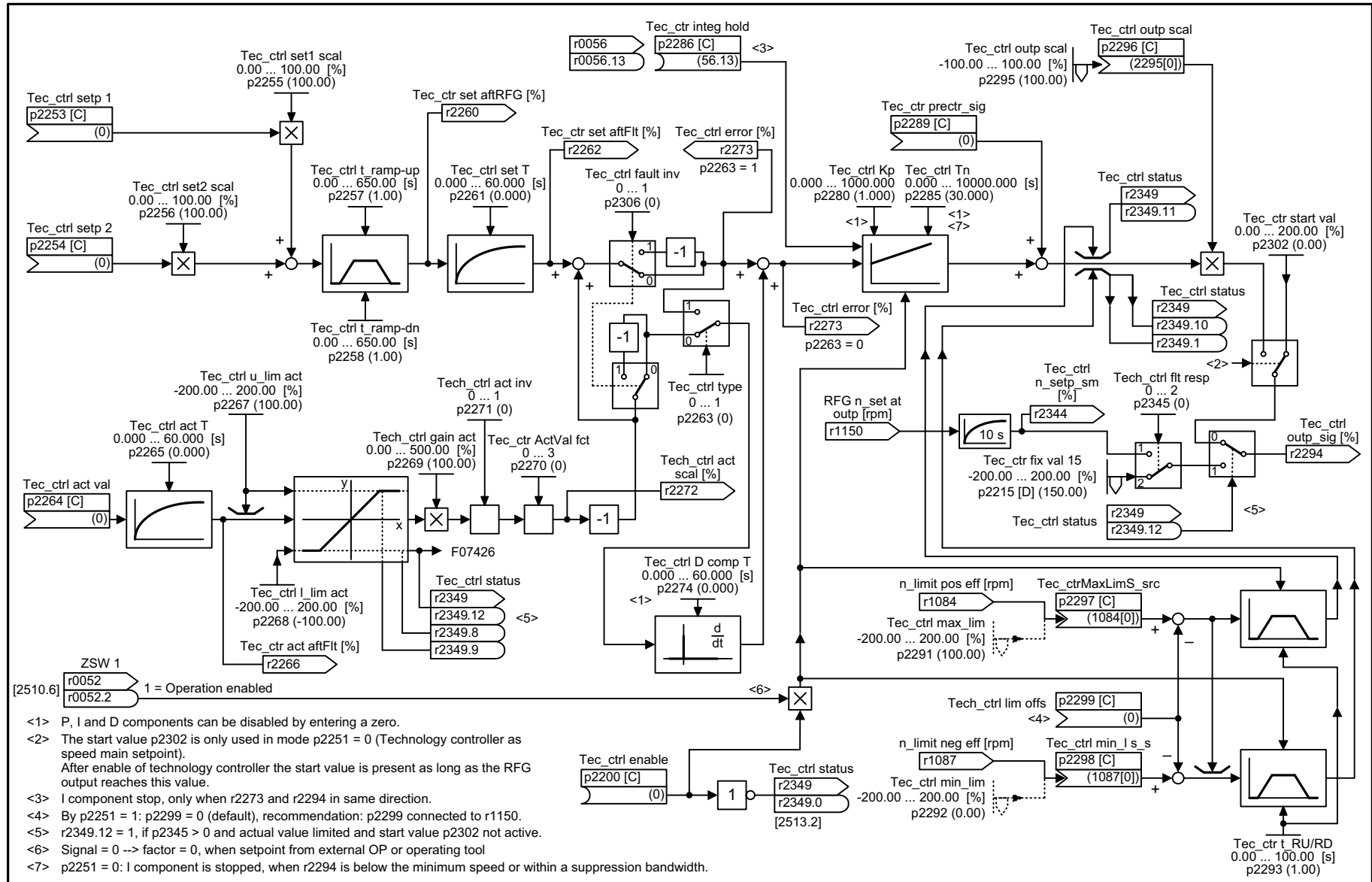
1	2	3	4	5	6	7	8
Technology controller					fp_7951_97_51.vsd	Function diagram	
Fixed value selection direct (p2216 = 1)					07.04.2014 V4.7	G120 CU240B/E-2	
							- 7951 -



1	2	3	4	5	6	7	8
Technology controller					fp_7954_97_61.vsd	Function diagram	
Motorized potentiometer					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 7954 -</b>

Fig. 3-133 7954 – Motorized potentiometer

Fig. 3-134 7958 – Closed-loop control



- <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). After enable of technology controller the start value is present as long as the RFG output reaches this value.
- <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> r2349.12 = 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> p2251 = 0: I component is stopped, when r2294 is below the minimum speed or within a suppression bandwidth.

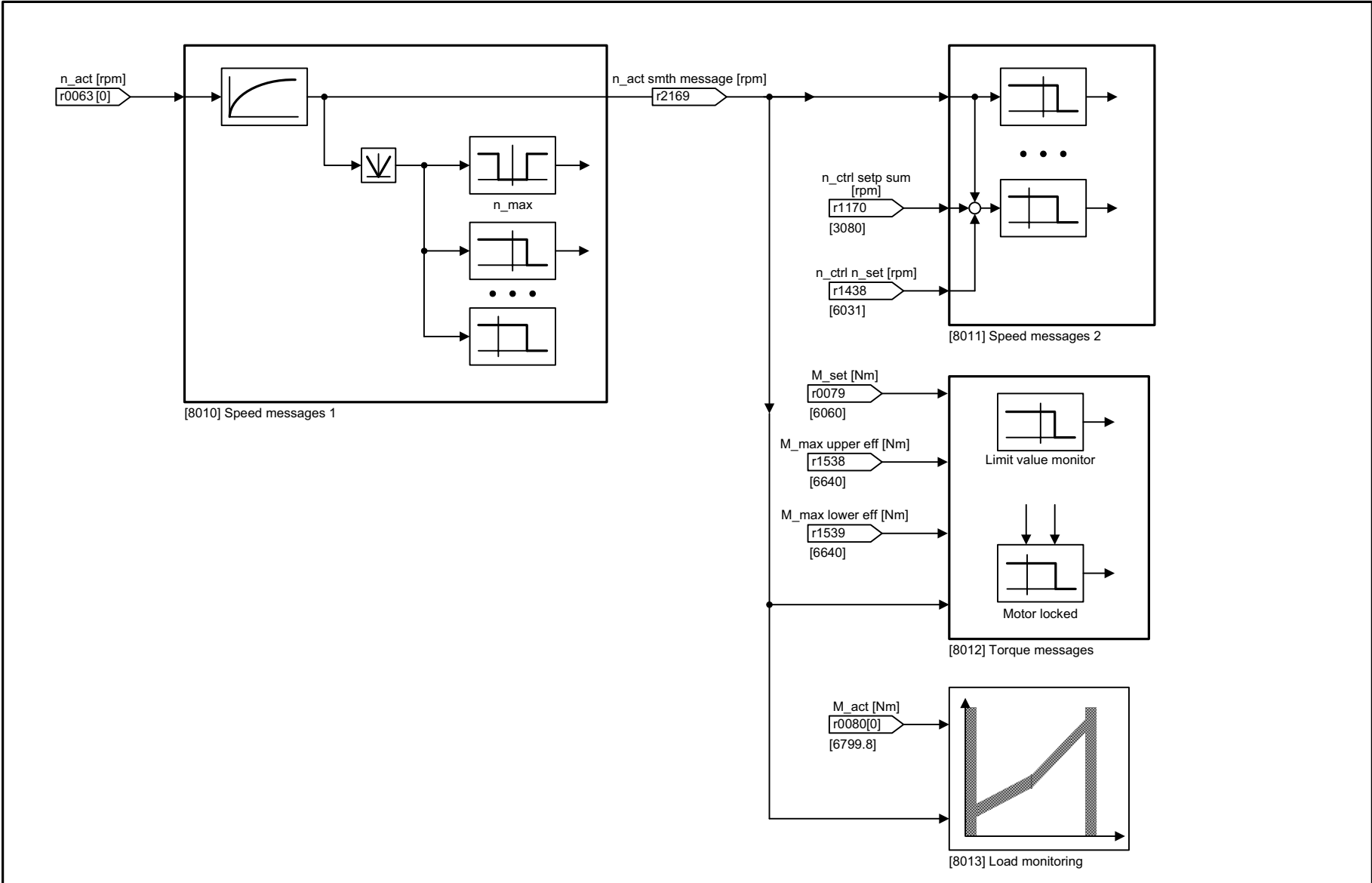
1	2	3	4	5	6	7	8
Technology controller					fp_7958_97_53.vsd	Function diagram	
Closed-loop control					07.04.2014 V4.7	G120 CU240B/E-2	
							- 7958 -

## 3.17 Signals and monitoring functions

### Function diagrams

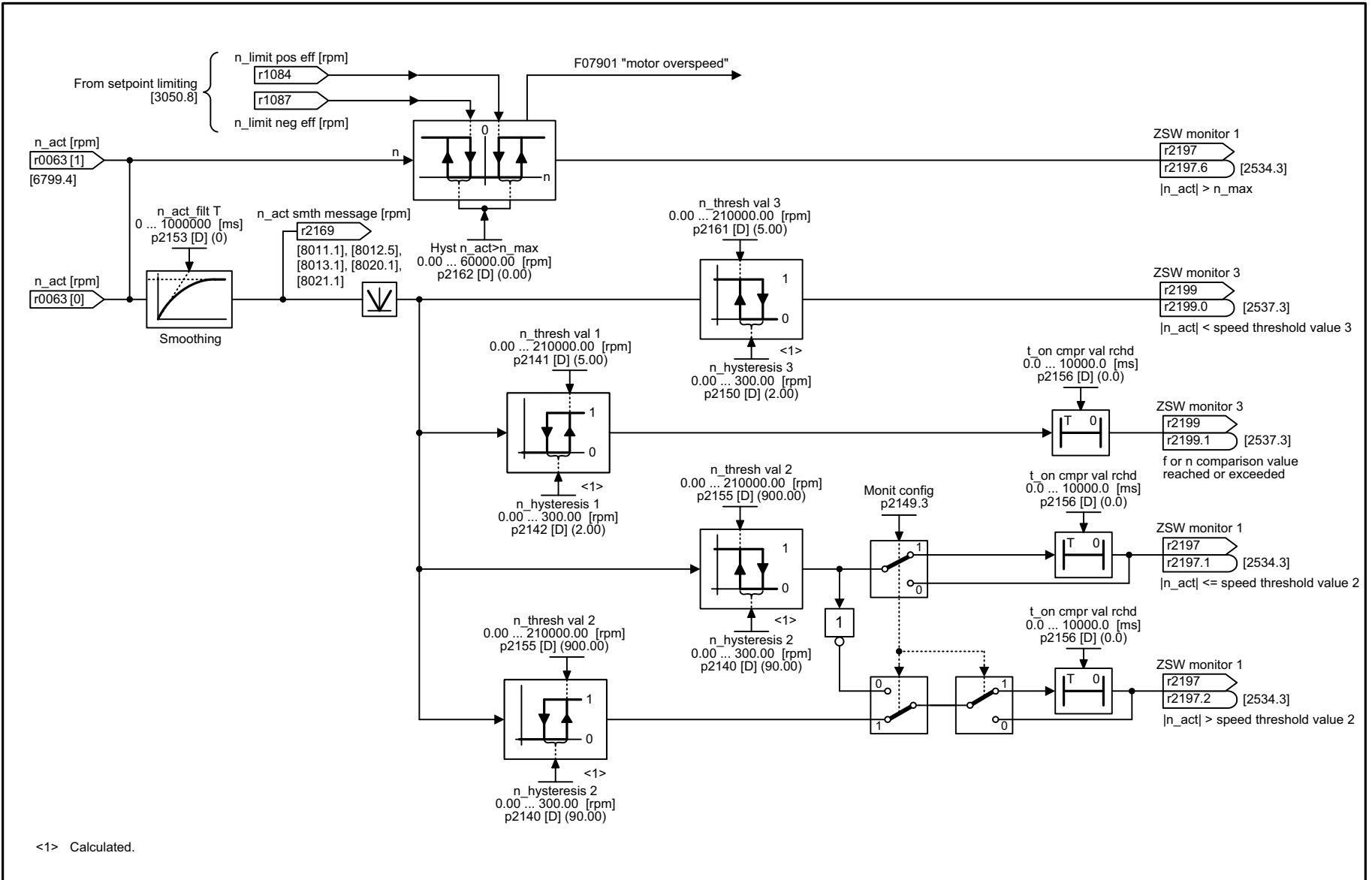
8005 – Overview	665
8010 – Speed signals 1	666
8011 – Speed signals 2	667
8012 – Torque signals, motor blocked/stalled	668
8013 – Load monitoring	669
8014 – Thermal monitoring, power unit	670
8016 – Thermal monitoring, motor	671
8017 – Thermal motor models	672
8020 – Monitoring functions 1	673
8021 – Monitoring functions 2	674





1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8005_97_53.vsd	Function diagram	
Overview					07.04.2014 V4.7	G120 CU240B/E-2	
- 8005 -							

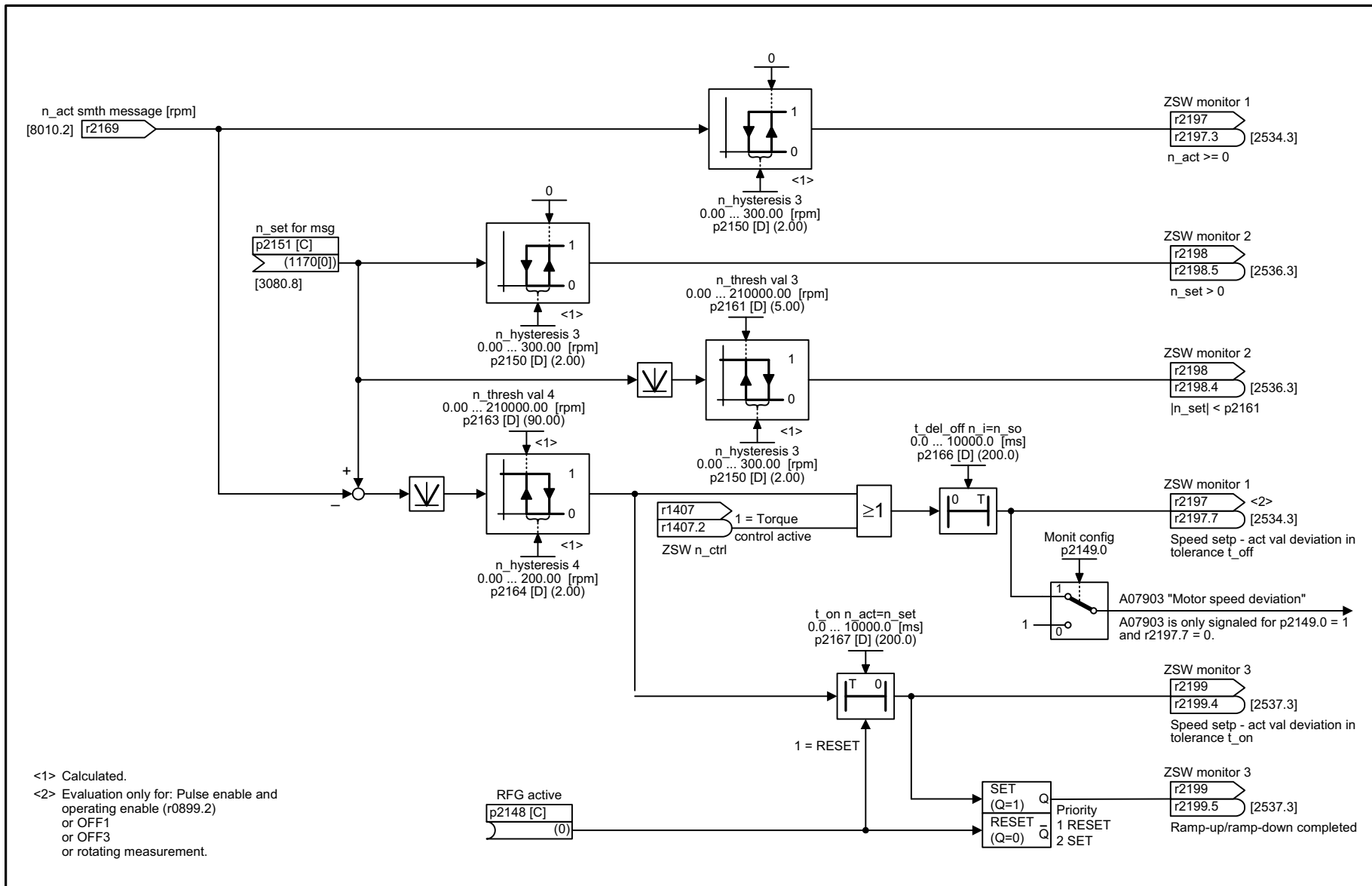
Fig. 3-135 8005 – Overview



<1> Calculated.

1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8010_97_53.vsd	Function diagram	
Speed signals 1					07.04.2014 V4.7	G120 CU240B/E-2	
<b>- 8010 -</b>							

Fig. 3-136 8010 – Speed signals 1



<1> Calculated.  
 <2> Evaluation only for: Pulse enable and operating enable (r0899.2) or OFF1 or OFF3 or rotating measurement.

1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8011_97_53.vsd	Function diagram	
Speed signals 2					07.04.2014 V4.7	G120 CU240B/E-2	
							- 8011 -

Fig. 3-137 8011 – Speed signals 2

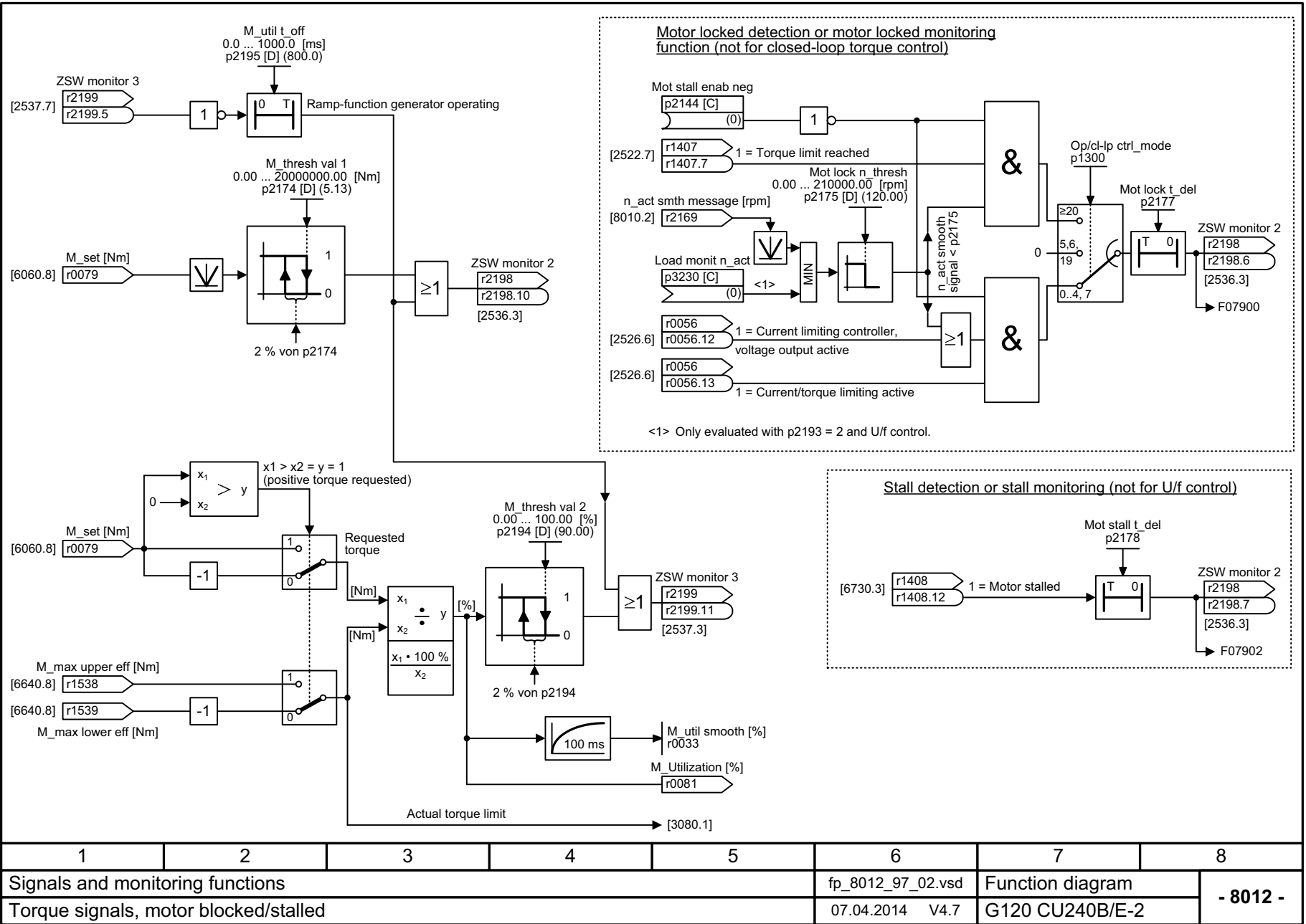
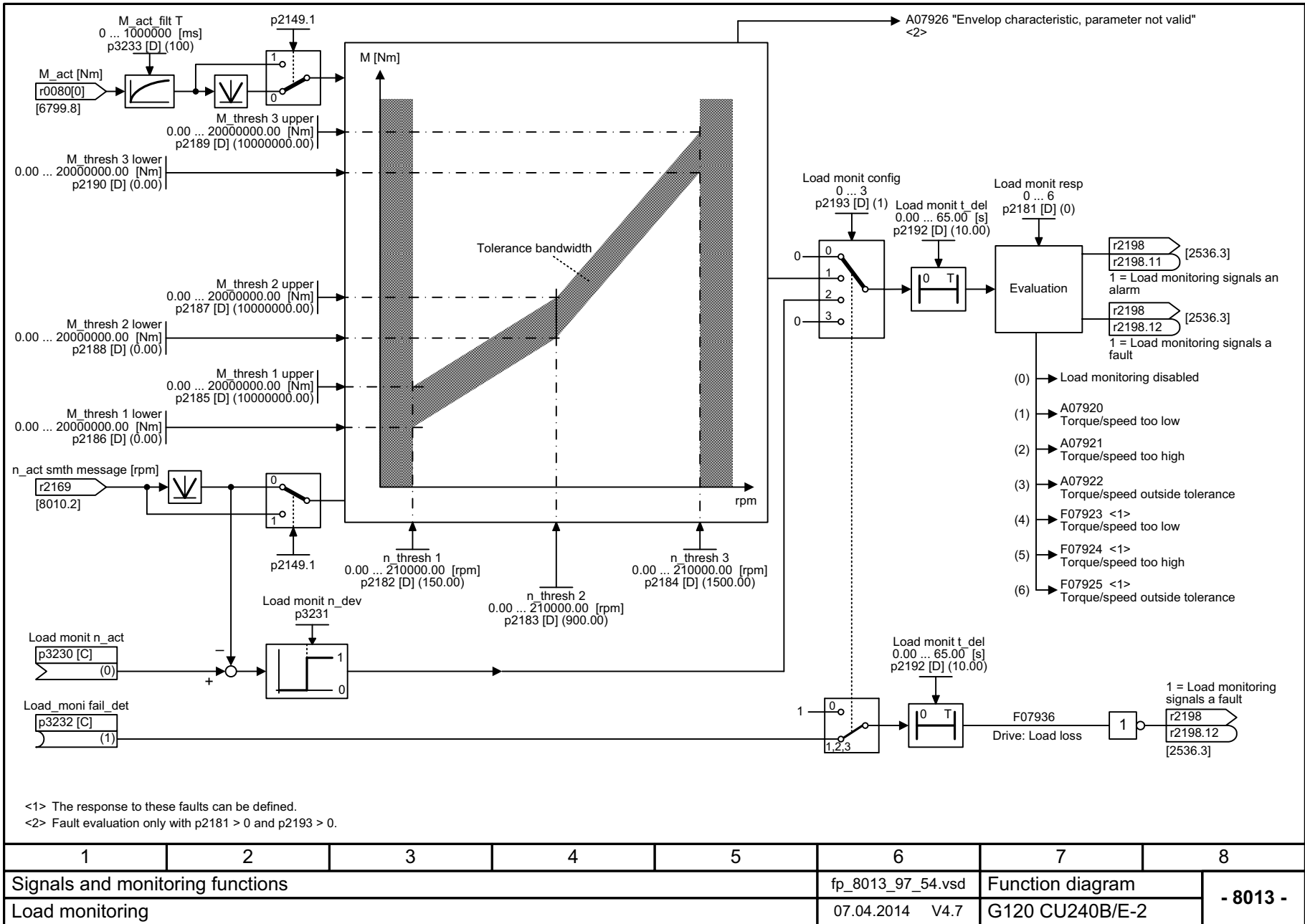


Fig. 3-138 8012 – Torque signals, motor blocked/stalled

1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8012_97_02.vsd	Function diagram	
Torque signals, motor blocked/stalled					07.04.2014 V4.7	G120 CU240B/E-2	
- 8012 -							

Fig. 3-139 8013 – Load monitoring



1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8013_97_54.vsd	Function diagram	
Load monitoring					07.04.2014 V4.7	G120 CU240B/E-2	
							- 8013 -

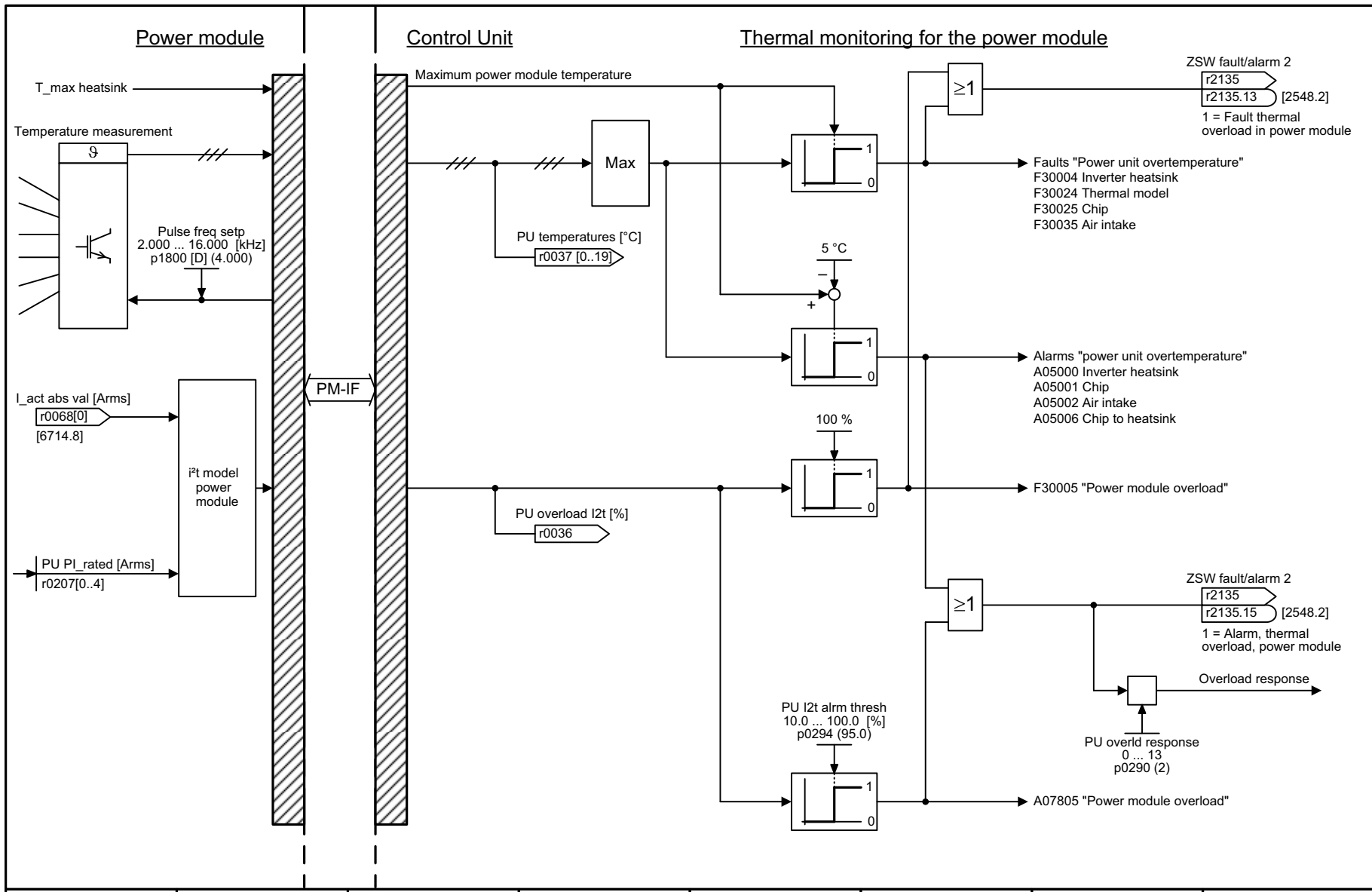
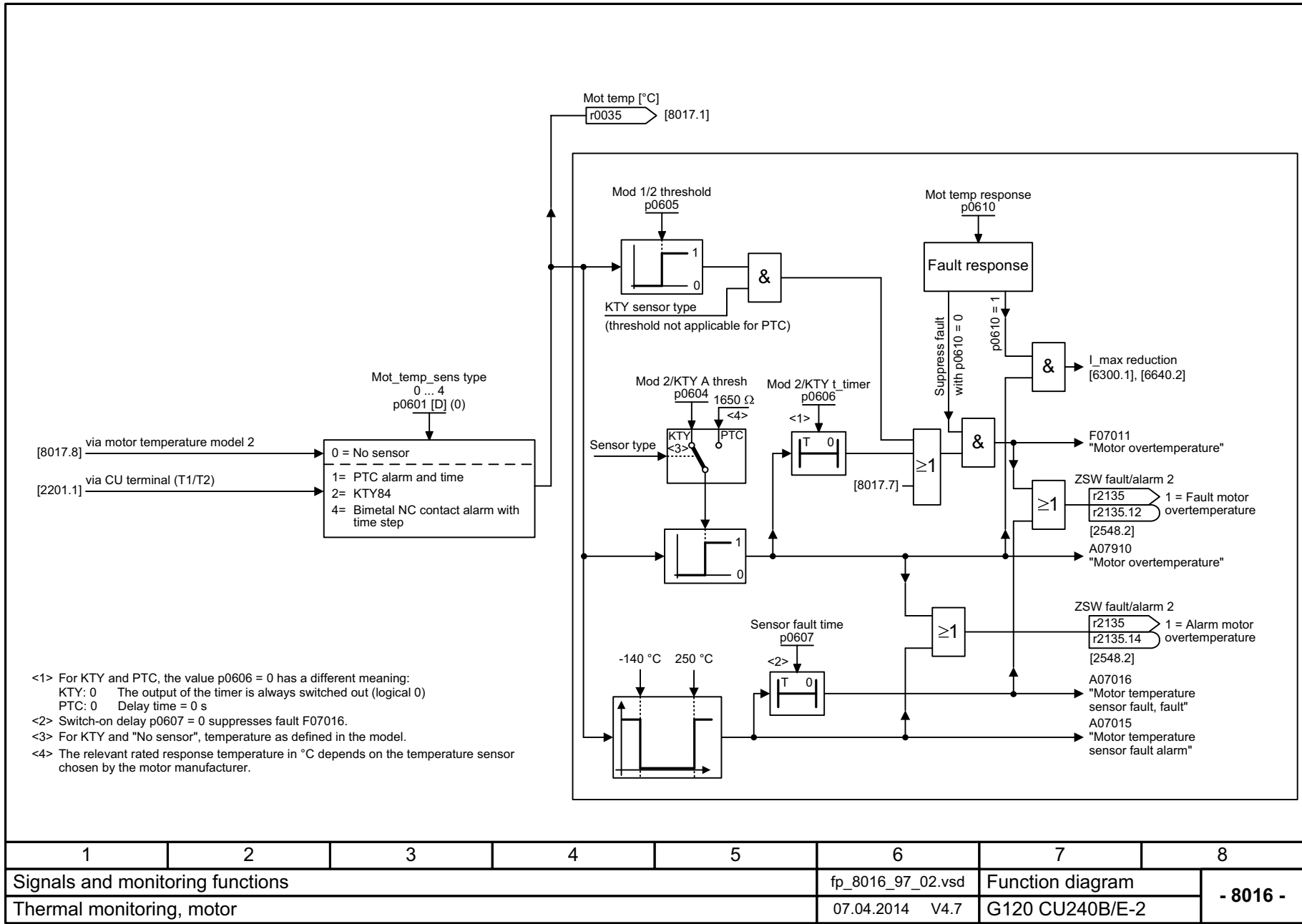


Fig. 3-140 8014 – Thermal monitoring, power unit

1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8014_97_51.vsd	Function diagram	
Thermal monitoring, power module					07.04.2014 V4.7	G120 CU240B/E-2	
- 8014 -							

Fig. 3-141 8016 – Thermal monitoring, motor



1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8016_97_02.vsd	Function diagram	
Thermal monitoring, motor					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 8016 -</b>

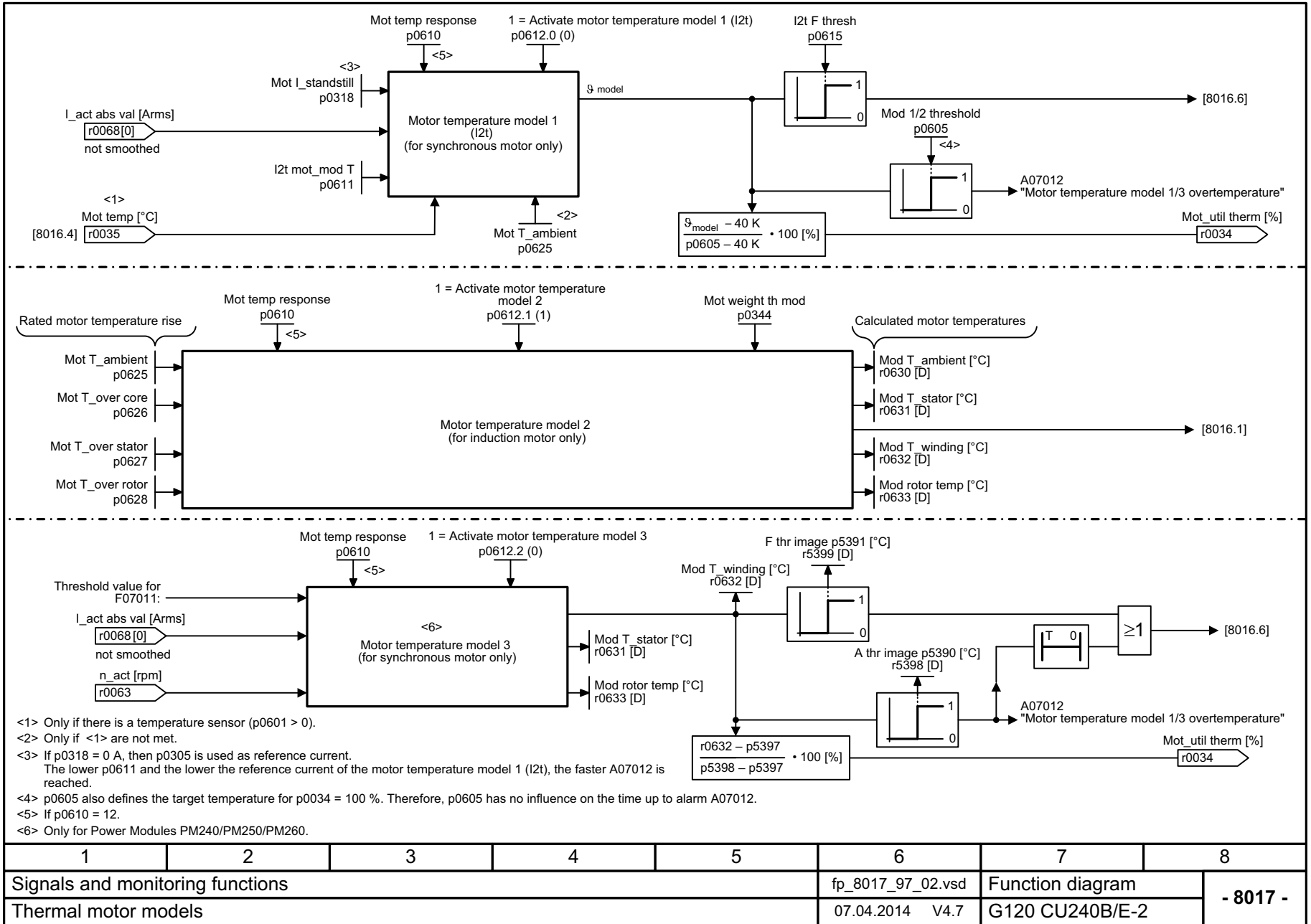
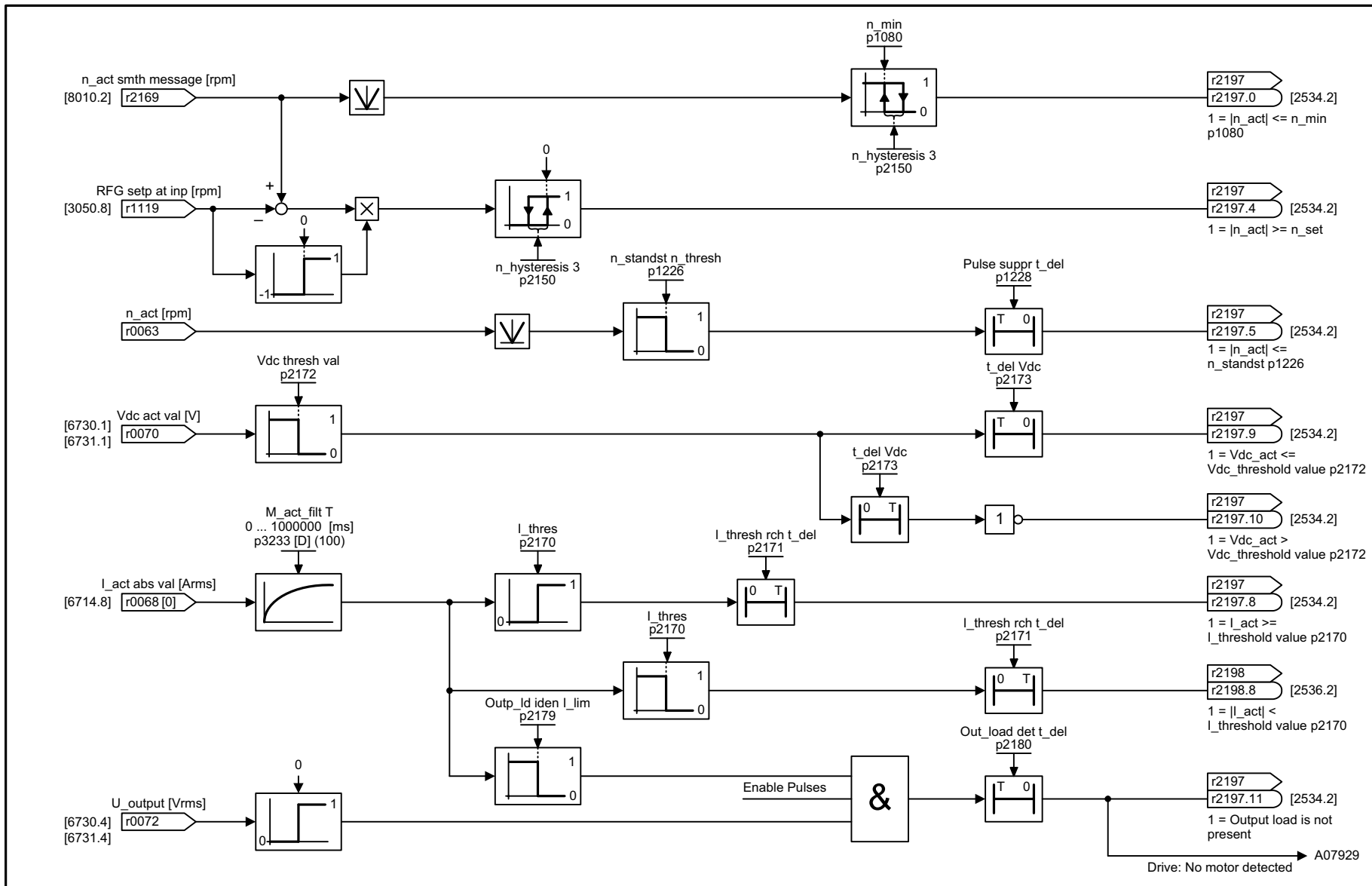


Fig. 3-142 8017 – Thermal motor models

1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8017_97_02.vsd	Function diagram	
Thermal motor models					07.04.2014 V4.7	G120 CU240B/E-2	
<b>- 8017 -</b>							





1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8020_97_53.vsd	Function diagram	
Monitoring functions 1					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 8020 -</b>

Fig. 3-143 8020 – Monitoring functions 1

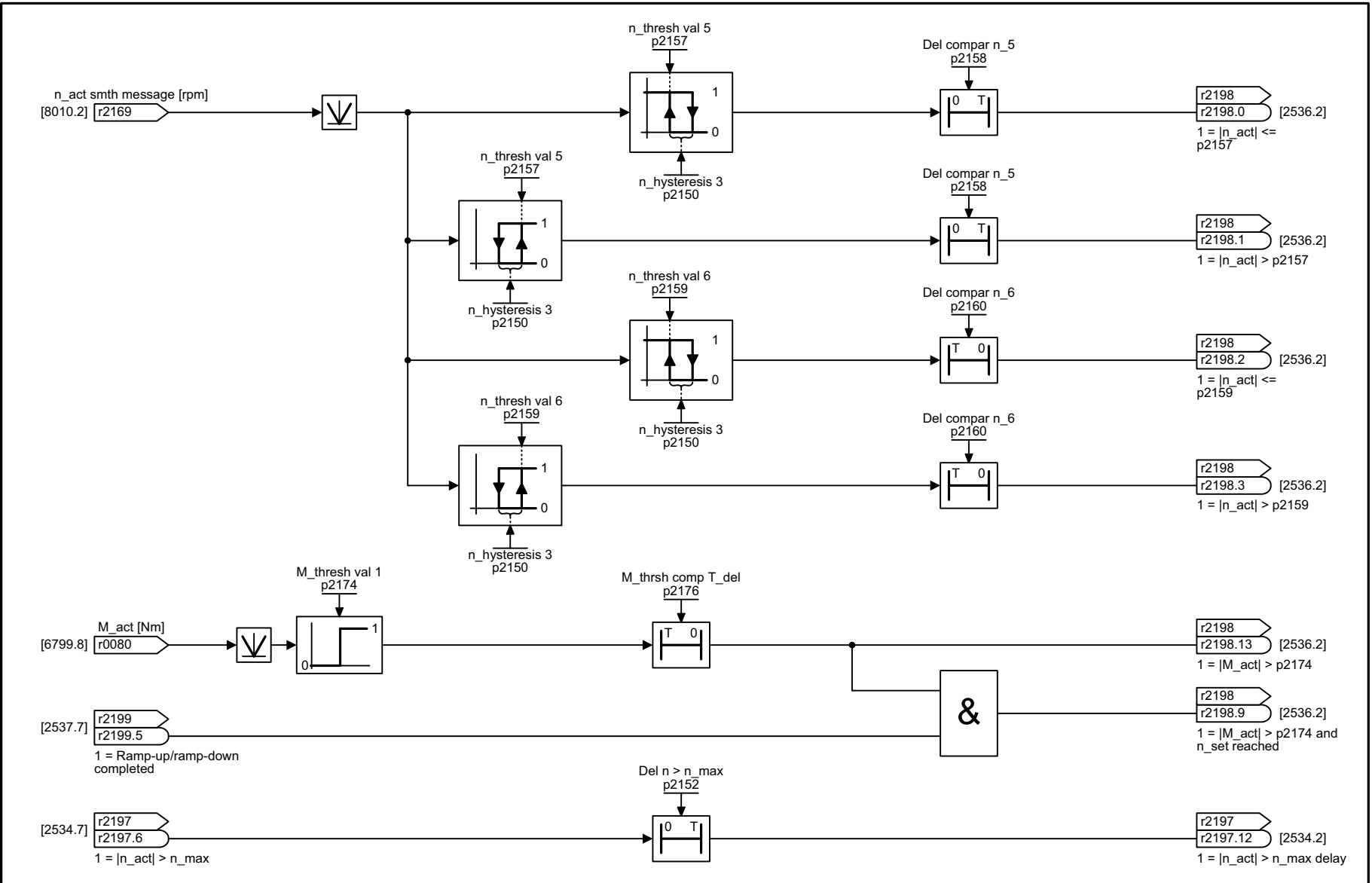


Fig. 3-144 8021 – Monitoring functions 2

1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8021_97_53.vsd	Function diagram	
Monitoring functions 2					07.04.2014 V4.7	G120 CU240B/E-2	
<b>- 8021 -</b>							

## 3.18 Diagnostics

### Function diagrams

8050 – Overview	676
8060 – Fault buffer	677
8065 – Alarm buffer	678
8070 – Faults/alarms trigger word (r2129)	679
8075 – Faults/alarms configuration	680

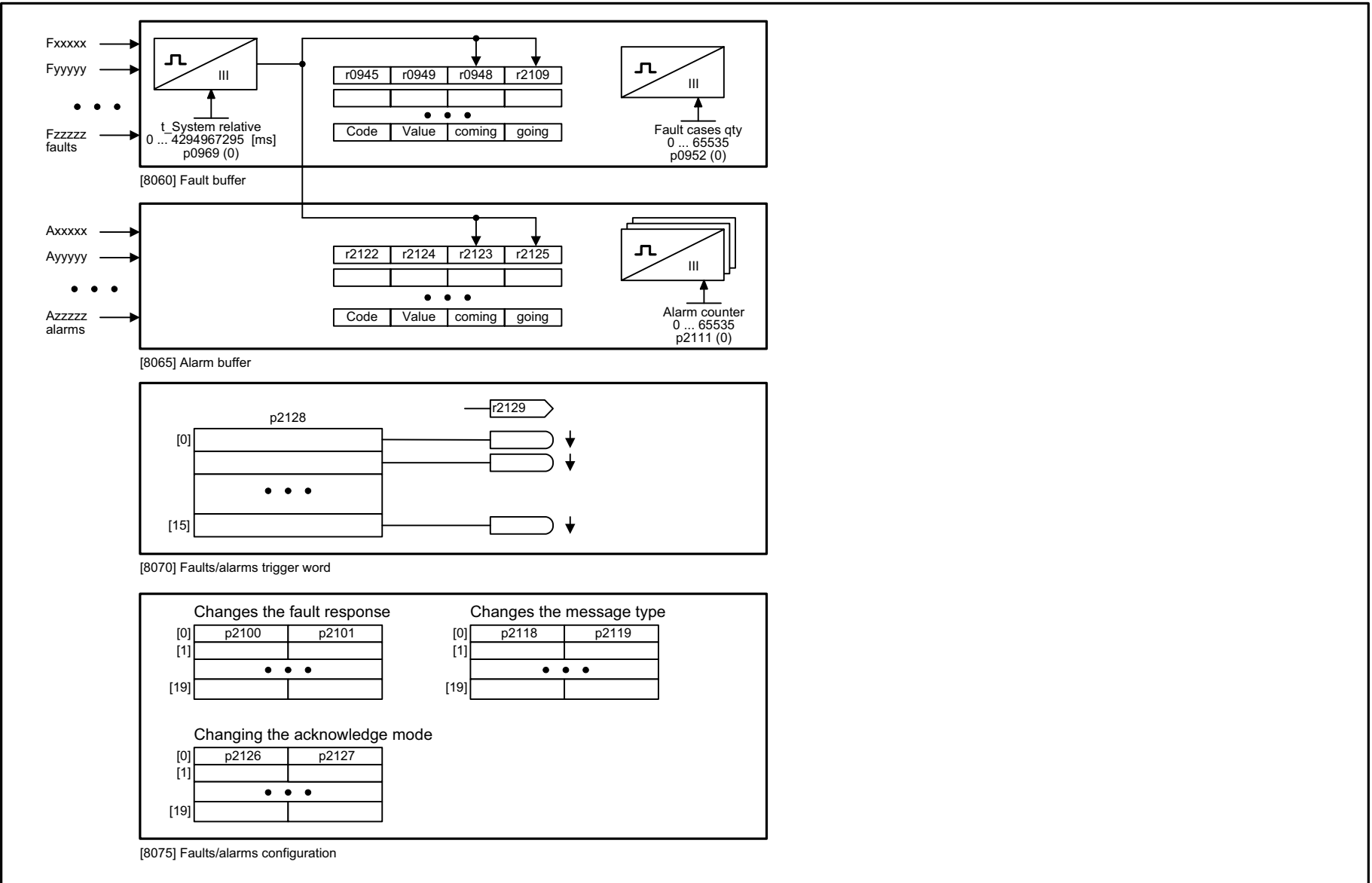
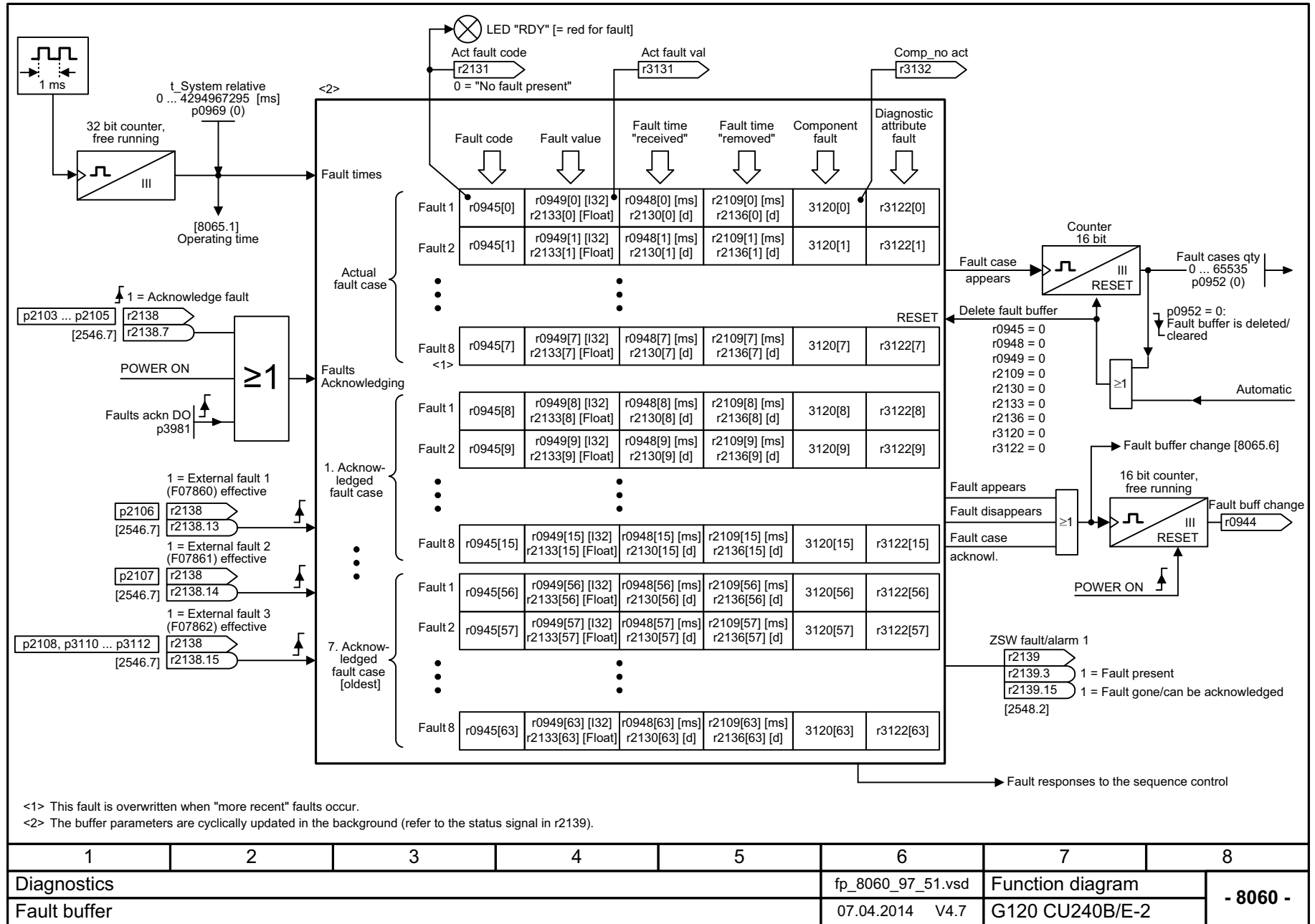


Fig. 3-145 8050 – Overview

1	2	3	4	5	6	7	8
Diagnostics					fp_8050_97_51.vsd	Function diagram	
Overview					07.04.2014 V4.7	G120 CU240B/E-2	
<b>- 8050 -</b>							

Fig. 3-146 8060 – Fault buffer



1	2	3	4	5	6	7	8
Diagnostics					fp_8060_97_51.vsd	Function diagram	
Fault buffer					07.04.2014 V4.7	G120 CU240B/E-2	
- 8060 -							

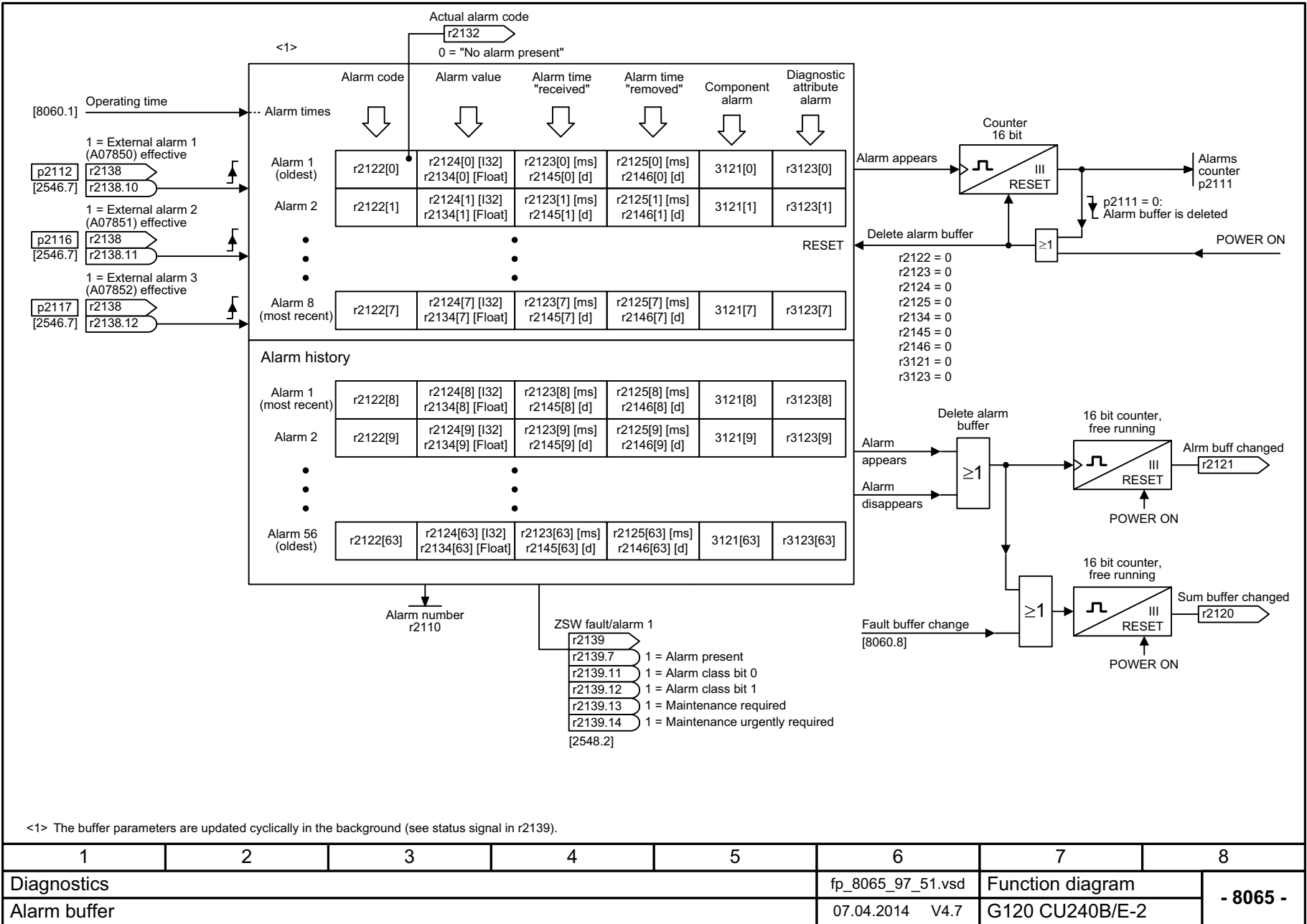
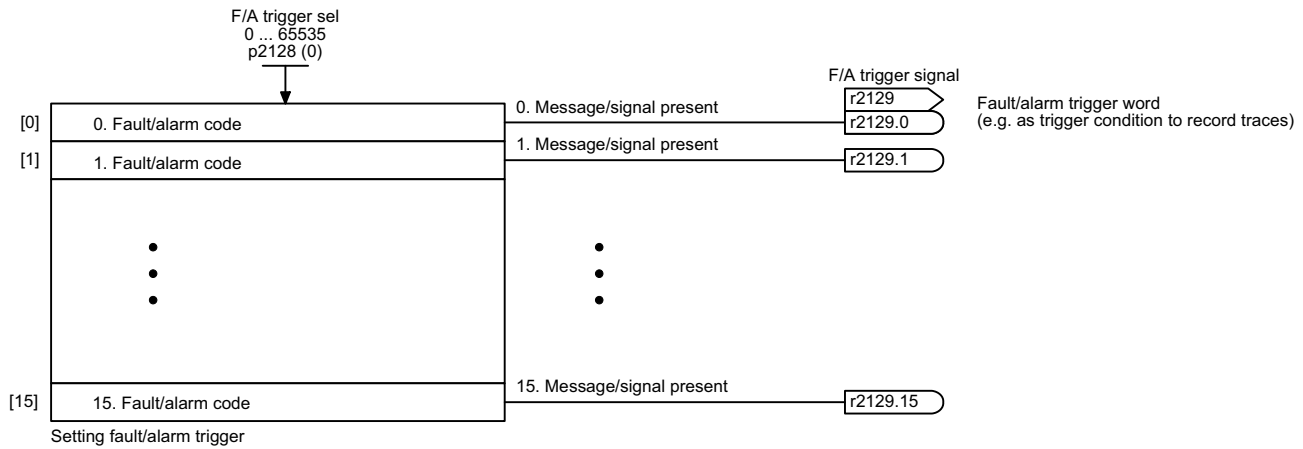


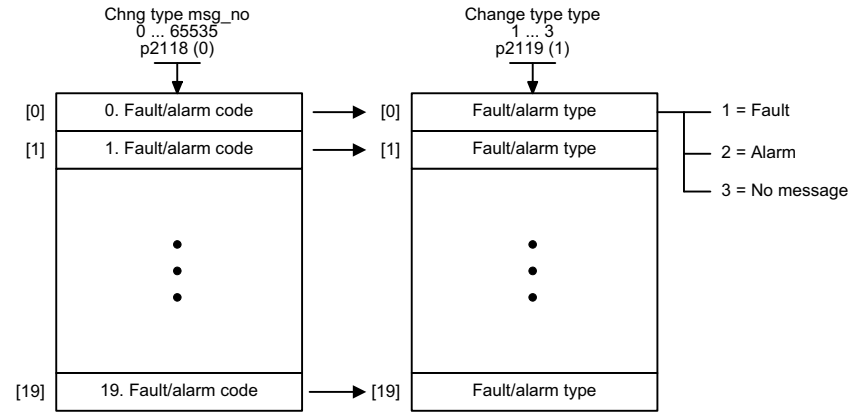
Fig. 3-147 8065 – Alarm buffer



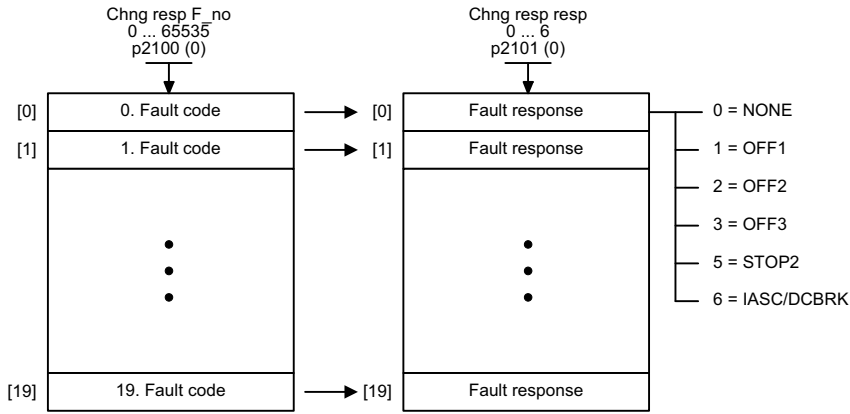
1	2	3	4	5	6	7	8
Diagnostics					fp_8070_97_61.vsd	Function diagram	
Faults/alarms trigger word (r2129)					07.04.2014 V4.7	G120 CU240B/E-2	
<b>- 8070 -</b>							

Fig. 3-148 8070 – Faults/alarms trigger word (r2129)

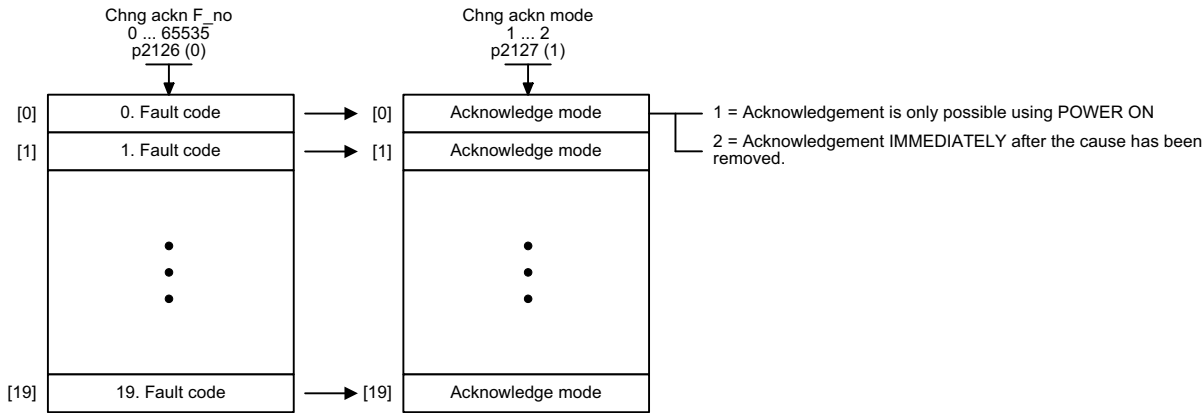
Changing the message type - fault <==> alarm for maximum 20 faults/alarms <1>



Changing the fault response for maximum 20 faults <1>



Changing the acknowledge mode for maximum 20 faults <1>



<1> The fault response, acknowledge mode and message type for all faults and alarms are set to meaningful default values in the factory setting. Changes 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.

1	2	3	4	5	6	7	8
Diagnostics					fp_8075_97_51.vsd	Function diagram	
Faults/alarms configuration					07.04.2014 V4.7	G120 CU240B/E-2	
- 8075 -							

Fig. 3-149 8075 – Faults/alarms configuration



## 3.19 Data sets

### Function diagrams

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8560 – Command Data Sets (CDS)	682
8565 – Drive Data Sets (DDS)	683

---

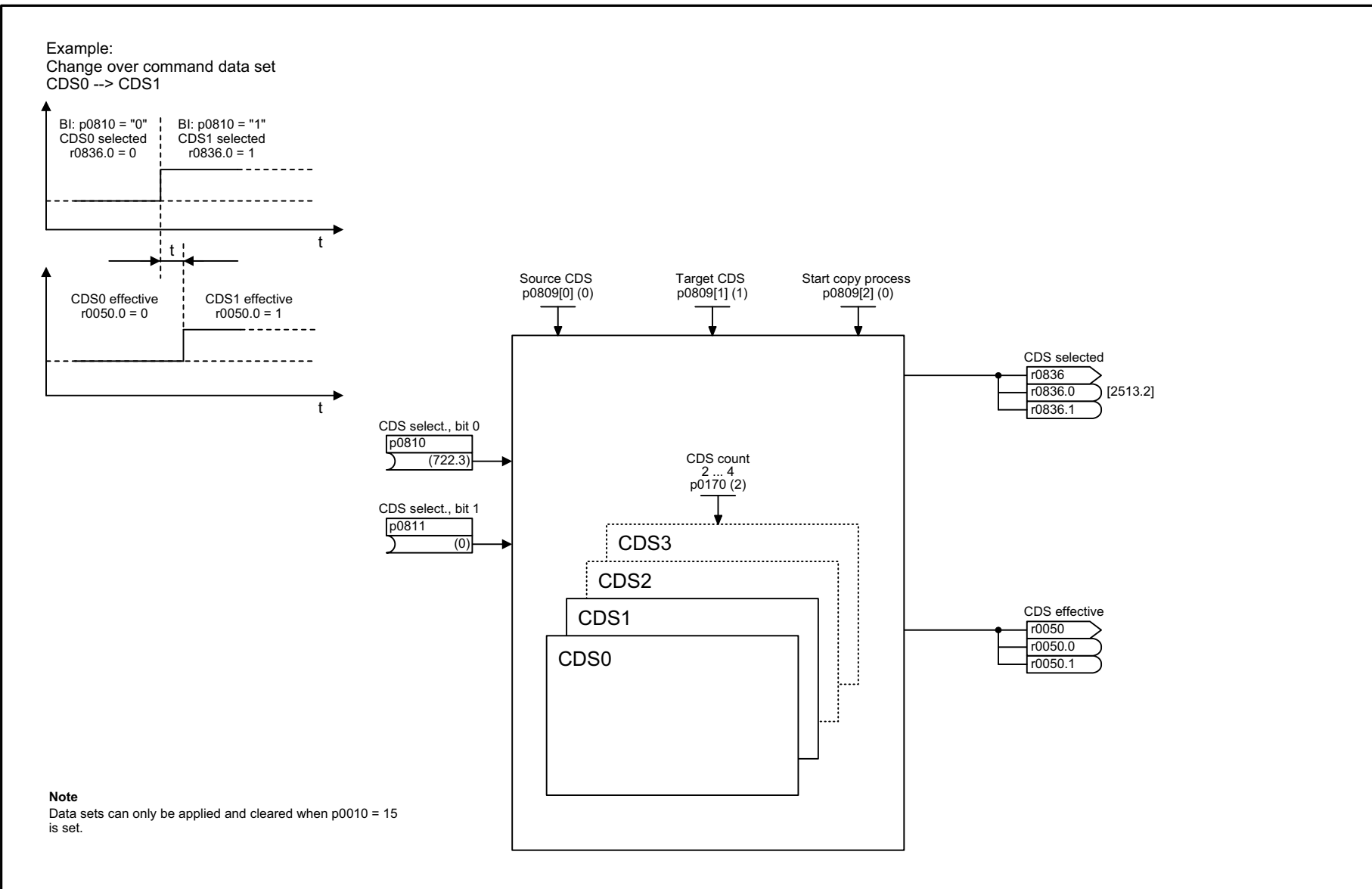
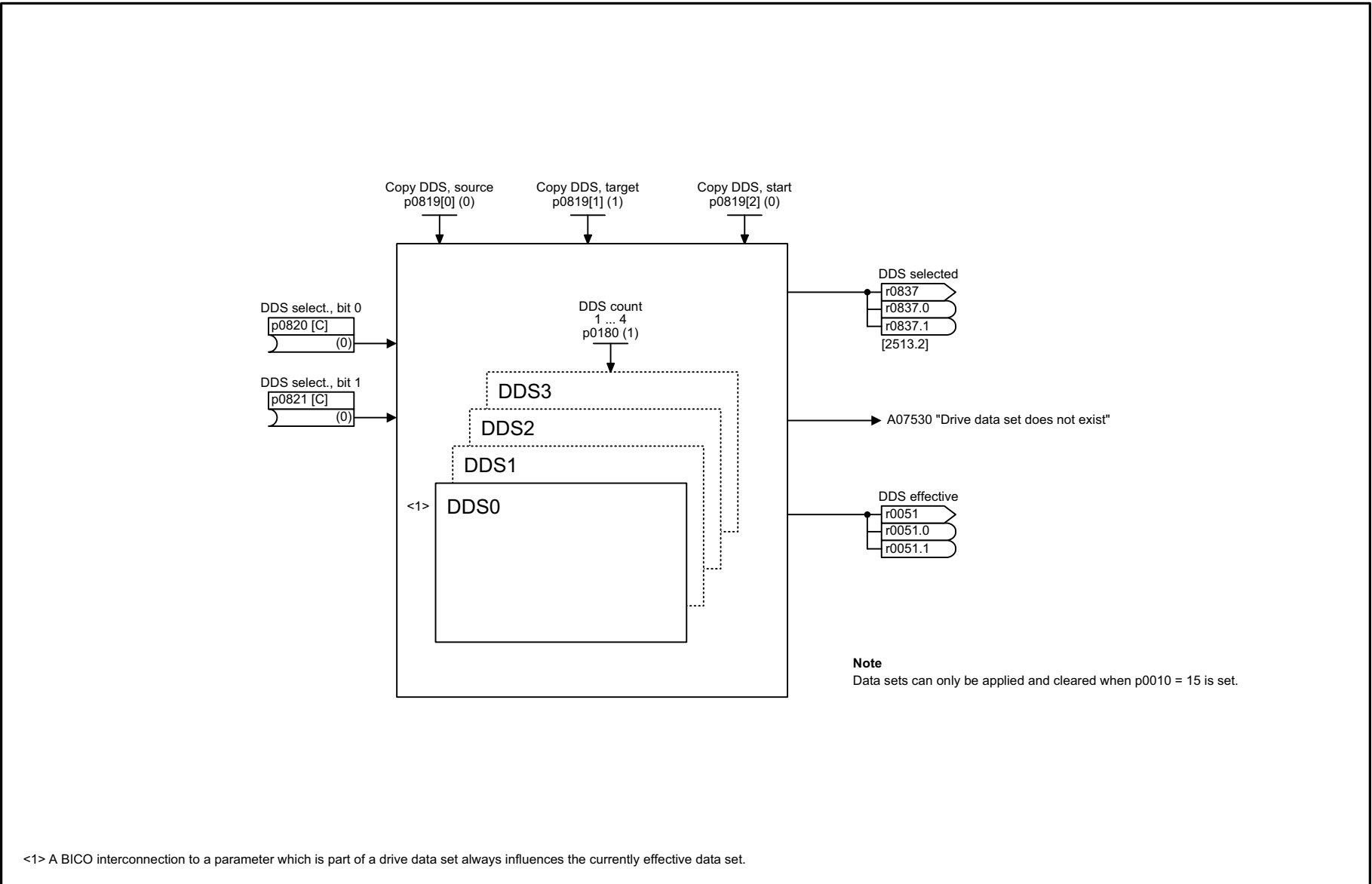


Fig. 3-150 8560 – Command Data Sets (CDS)

1	2	3	4	5	6	7	8
Data sets					fp_8560_97_51.vsd	Function diagram	
Command Data Sets (CDS)					07.04.2014 V4.7	G120 CU240B/E-2	
							<b>- 8560 -</b>



1	2	3	4	5	6	7	8
Data sets					fp_8565_97_54.vsd	Function diagram	
Drive Data Sets (DDS)					07.04.2014 V4.7	G120 CU240B/E-2	
							- 8565 -

Fig. 3-151 8565 – Drive Data Sets (DDS)



# Faults and alarms

## Content

4.1	Overview of faults and alarms	686
4.2	List of faults and alarms	697

## 4.1 Overview of faults and alarms

### 4.1.1 General information

#### Display of faults/alarms (messages)

In the case of a fault, the drive signals the corresponding fault(s) and/or alarm(s).

For example, the following methods for displaying faults and alarms are available:

- Display via the fault and alarm buffer with PROFIBUS/PROFINET
- Display online via the commissioning software
- Display and operating unit (e.g. BOP, AOP)

#### Differences between faults and alarms

The differences between faults and alarms are as follows:

Table 4-1 Differences between faults and alarms

Type	Description
Faults	<p>What happens when a fault occurs?</p> <ul style="list-style-type: none"> <li>• The appropriate fault reaction is triggered.</li> <li>• Status signal ZSW1.3 is set.</li> <li>• The fault is entered in the fault buffer.</li> </ul> <p>How are faults eliminated?</p> <ul style="list-style-type: none"> <li>• Remove the original cause of the fault.</li> <li>• Acknowledge the fault.</li> </ul>
Alarms	<p>What happens when an alarm occurs?</p> <ul style="list-style-type: none"> <li>• Status signal ZSW1.7 is set.</li> <li>• The alarm is entered in the alarm buffer.</li> </ul> <p>How are alarms removed?</p> <ul style="list-style-type: none"> <li>• Alarms acknowledge themselves. If the cause of the alarm is no longer present, they automatically reset themselves.</li> </ul>

## Fault reactions

The following fault reactions are defined:

Table 4-2 Fault reactions

List	PROFIdrive	Reaction	Description
NONE	-	None	<p>No reaction when a fault occurs.</p> <p><b>Note</b></p> <p>With "Basic positioner" (r0108.4 = 1), the following applies: When a fault occurs with fault reaction "NONE", an active traversing task is interrupted and the system switches to tracking mode until the fault has been rectified and acknowledged.</p>
OFF1	ON/ OFF	Brake along the ramp-function generator down ramp followed by pulse inhibit	<p><b>Closed-loop speed control (p1300 = 20, 21)</b></p> <ul style="list-style-type: none"> <li>• n_set = 0 is input immediately to brake the drive along the ramp-function generator ramp down (p1121).</li> <li>• When zero speed is detected, the motor holding brake (if parameterized) is closed (p1215). The pulses are suppressed when the brake application time (p1217) expires.</li> </ul> <p>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.</p> <p><b>Torque control (p1300 = 22, 23)</b></p> <ul style="list-style-type: none"> <li>• The following applies for torque control: Reaction as for OFF2.</li> <li>• When the system switches to torque control with p1501, the following applies: No separate braking reaction.</li> </ul> <p>If the actual speed value drops below the speed threshold (p1226) or the timer stage (p1227) has expired, the motor holding brake (if one is being used) is closed. The pulses are suppressed when the brake application time (p1217) expires.</p>
OFF1_ DELAYED	-	As for OFF1, however delayed	<p>Faults with this fault response only become effective after the delay time in p3136 has expired.</p> <p>The remaining time up to OFF1 is displayed in r3137.</p>
OFF2	COAST STOP	Internal/external pulse inhibit	<p><b>Closed-loop speed and torque control</b></p> <ul style="list-style-type: none"> <li>• Instantaneous pulse suppression, the drive "coasts" to a standstill.</li> <li>• The motor holding brake (if one is being used) is closed immediately.</li> <li>• Switching on inhibited is activated.</li> </ul>

## 4 Faults and alarms

### 4.1 Overview of faults and alarms

Table 4-2 Fault reactions, continued

List	PROFIdrive	Reaction	Description
OFF3	QUICK STOP	Braking along the OFF3 down ramp followed by pulse inhibit	<p><b>Closed-loop speed control (p1300 = 20, 21)</b></p> <ul style="list-style-type: none"> <li>n_set = 0 is input immediately to brake the drive along the OFF3 ramp down (p1135).</li> <li>When zero speed is detected, the motor holding brake (if parameterized) is closed. The pulses are suppressed when the closing time of the holding brake (p1217) expires. Zero speed is detected if the actual speed drops below the threshold (p1226) or if the monitoring time (p1227) started when the speed setpoint &lt;= speed threshold (p1226) has expired.</li> <li>Switching on inhibited is activated.</li> </ul> <p><b>Torque control (p1300 = 22, 23)</b></p> <ul style="list-style-type: none"> <li>Changeover to speed-controlled operation and other reactions as described for speed-controlled operation.</li> </ul>
STOP2	-	n_set = 0	<ul style="list-style-type: none"> <li>n_set = 0 is input immediately to brake the drive along the OFF3 ramp down (p1135).</li> <li>The drive remains in closed-loop speed control.</li> </ul>
IASC/ DCBRAKE	-	-	<ul style="list-style-type: none"> <li>For synchronous motors, the following applies: If a fault occurs with this fault reaction, an internal armature short-circuit is triggered. The conditions for p1231 = 4 must be observed.</li> <li>For induction motors, the following applies: If a fault occurs with this fault reaction, DC braking is triggered. DC braking must have been commissioned (p1230 to p1239).</li> </ul>
ENCODER	-	Internal/external pulse inhibit (p0491)	<p>The fault reaction ENCODER is applied as a function of the setting in p0491. Factory setting: p0491 = 0 --&gt; Encoder fault causes OFF2</p> <p><b>Notice</b></p> <p>When changing p0491, it is imperative that the information in the description of this parameter is carefully observed.</p>



## Acknowledging faults

The list of faults and alarms specifies how to acknowledge each fault after the cause has been removed.

Table 4-3 Acknowledging faults

Acknowledgement	Description						
POWER ON	<p>The fault is acknowledged by a POWER ON (switch drive unit off and on again).</p> <p><b>Note</b> If this action has not removed the fault cause, the fault is displayed again immediately after power up.</p>						
IMMEDIATELY	<p>Faults can be acknowledged on one drive object (Points 1 to 3) or on all drive objects (Point 4) as follows:</p> <p>1 Acknowledge by setting parameter: p3981 = 0 --&gt; 1</p> <p>2 Acknowledge via binector inputs:</p> <table> <tr> <td>p2103</td> <td>BI: 1. Acknowledge faults</td> </tr> <tr> <td>p2104</td> <td>BI: 2. Acknowledge faults</td> </tr> <tr> <td>p2105</td> <td>BI: 3. Acknowledge faults</td> </tr> </table> <p>3 Acknowledge via PROFIBUS control signal: STW1.7 = 0 --&gt; 1 (edge)</p> <p><b>Note</b></p> <ul style="list-style-type: none"> <li>• These faults can also be acknowledged by a POWER ON.</li> <li>• If the cause of the fault has not been removed, the fault will continue to be displayed after acknowledgement.</li> <li>• Safety Integrated faults The "Safe Torque Off" (STO) function must be deselected before these faults are acknowledged.</li> </ul>	p2103	BI: 1. Acknowledge faults	p2104	BI: 2. Acknowledge faults	p2105	BI: 3. Acknowledge faults
p2103	BI: 1. Acknowledge faults						
p2104	BI: 2. Acknowledge faults						
p2105	BI: 3. Acknowledge faults						
PULSE INHIBIT	<p>The fault can only be acknowledged when the pulses are inhibited (r0899.11 = 0).</p> <p>The same options are available for acknowledging as described under acknowledge IMMEDIATELY.</p>						

### 4.1.2 Explanation of the list of faults and alarms

The data in the following example has been chosen at random. The information listed below is the maximum amount of information that a description can contain. Some of the information is optional.

The "List of faults and alarms" (Page 697) has the following layout:

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

---

<b>Axxxxx (F, N)</b>	<b>Fault location (optional): Name</b>
<b>Message class:</b>	Text of the message class (number according to PROFIdrive)
<b>Reaction:</b>	NONE
<b>Acknowledgement:</b>	NONE
<b>Cause:</b>	Description of possible causes. Fault value (r0949, interpret format): or alarm value (r2124, interpret format): (optional) Information about fault or alarm values (optional).
<b>Remedy:</b>	Description of possible remedies.

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

<b>Axxxxx</b>	<b>Alarm xxxxx</b>
<b>Axxxxx (F, N)</b>	<b>Alarm xxxxx (message type can be changed to F or N)</b>
<b>Fxxxxx</b>	<b>Fault xxxxx</b>
<b>Fxxxxx (A, N)</b>	<b>Fault xxxxx (report type can be changed to A or N)</b>
<b>Nxxxxx</b>	<b>No message</b>
<b>Nxxxxx (A)</b>	<b>No message (message type can be changed to A)</b>
<b>Cxxxxx</b>	<b>Safety message (separate message buffer)</b>

A message comprises a letter followed by the relevant number.

The meaning of the letters is as follows:

- A means "Alarm"
- F means "Fault"
- N means "No message" or "Internal message"
- C means "Safety message"

The optional brackets indicate whether the type specified for this message can be changed and which message types can be adjusted via parameters (p2118, p2119).

Information about reaction and acknowledgement is specified independently for a message with adjustable message type (e.g. reaction to F, acknowledgement for F).

---

**Note**

You can change the default properties of a fault or alarm by setting parameters.

References: /BA6/ SINAMICS G120 Operating Instructions  
Frequency Converter with CU240B/E-2 Control Units,  
Section "Alarms, faults, and system messages"

The "List of faults and alarms" (Page 697) supplies information referred to the properties of a message set as default. If the properties of a specific message are changed, the corresponding information may have to be modified in this list.

---

**Fault location (optional): Name**

The fault location (optional), the name of the fault or alarm and the message number are all used to identify the message (e.g. with the commissioning software).

**Message class:**

For each message, specifies the associated message class with the following structure:

Text of the message class (number according to PROFIdrive)

The message classes are transferred at different interfaces to higher-level control systems and their associated display and operating units.

The message classes that are available are shown in Table "Message classes and coding of various diagnostic interfaces" (Page 692). In addition to the text of the message class and their number according to PROFIdrive – as well as a brief help text regarding the cause and remedy – they also include information about the various diagnostic interfaces:

- PN (hex)  
Specifies the "Channel error type" of the PROFINET channel diagnostics.  
When activating the channel diagnostics, using the GSDML file, the texts listed in the table can be displayed.
- DS1 (dec)  
Specifies the bit number in data set DS1 of the diagnostic alarm for SIMATIC S7.  
When the diagnostic alarms are activated, the texts listed in the table can be displayed.
- DP (dec)  
Specifies the "Error type" of the channel-related diagnostics for PROFIBUS.  
When the channel diagnostics are activated, the texts listed in the standard and the GSD file can be displayed.
- ET 200 (dec)  
Specifies the "Error type" of the channel-related diagnostics for the SIMATIC ET 200pro FC-2 device.  
When the channel diagnostics are activated, the texts listed in the standard and the GSD file of the ET 200pro can be displayed.
- NAMUR (r3113.x)  
Specifies the bit number in parameter r3113.

For the interfaces DP, ET 200, NAMUR, in some instances, the message classes are combined.

## 4 Faults and alarms

### 4.1 Overview of faults and alarms

Table 4-4 Message classes and coding of various diagnostic interfaces

Text of the message class (number according to PROFIdrive) Cause and remedy.	Diagnostics interface				
	PN (hex)	DS1 (dec)	DP (dec)	ET 200 (dec)	NAMUR (r3113.x)
<b>Hardware/software errors (1)</b> A hardware or software malfunction was detected. Carry out a POWER ON for the relevant component. If it occurs again, contact the hotline.	9000	0	16	9	0
<b>Line fault (2)</b> A line supply fault has occurred (phase failure, voltage level ...). Check the line supply and fuses. Check the supply voltage. Check the wiring.	9001	1	17	24	1
<b>Supply voltage fault (3)</b> An electronics supply voltage fault (48 V, 24 V, 5 V ...) was detected. Check the wiring. Check the voltage level.	9002	2	2 <sup>1</sup> 3 <sup>2</sup>	2 <sup>1</sup> 3 <sup>2</sup>	15
<b>DC-link overvoltage (4)</b> The DC-link voltage has assumed an inadmissibly high value. Check the dimensioning of the system (line supply, reactor, voltages). Check the infeed settings.	9003	3	18	24	2
<b>Power electronics fault (5)</b> An impermissible operating state of the power electronics was detected (overcurrent, overtemperature, IGBT failure ...). Check compliance with the permissible load cycles. Check the ambient temperatures (fan).	9004	4	19	24	3
<b>Overtemperature of the electronic component (6)</b> The temperature in the component has exceeded the highest permissible limit. Check the ambient temperature / control cabinet ventilation.	9005	5	20	5	4
<b>Ground fault / inter-phase short-circuit detected (7)</b> A ground fault / inter-phase short-circuit was detected in the power cables or in the motor windings. Check the power cables (connection). Check the motor.	9006	6	21	20	5
<b>Motor overload (8)</b> The motor was operated outside the permissible limits (temperature, current, torque ...). Check the load cycles and set limits. Check the ambient temperature / motor cooling.	9007	7	22	24	6
<b>Communication to the higher-level controller faulted (9)</b> The communication to the higher-level controller (internal coupling, PROFIBUS, PROFINET ...) is faulted or interrupted. Check the state of the higher-level controller. Check the communication connection/-wiring. Check the bus configuration/cycles.	9008	8	23	19	7
<b>Safety monitoring channel has detected an error (10)</b> A safe operation monitoring function has detected an error.	9009	9	24	25	8
<b>Actual position/speed value incorrect or not available (11)</b> An illegal signal state was detected while evaluating the encoder signals (track signals, zero marks, absolute values ...). Check the encoder / state of the encoder signals. Observe the maximum permissible frequencies.	900A	10	25	29	9

Table 4-4 Message classes and coding of various diagnostic interfaces, continued

Text of the message class (number according to PROFIdrive) Cause and remedy.	Diagnostics interface				
	PN (hex)	DS1 (dec)	DP (dec)	ET 200 (dec)	NAMUR (r3113.x)
<b>Internal (DRIVE-CLiQ) communication faulted (12)</b> The internal communication between the SINAMICS components is faulted or interrupted. Check the DRIVE-CLiQ wiring. Ensure an EMC-compliant installation. Observe the maximum permissible quantity structures / cycles.	900B	11	26	31	10
<b>Infeed fault (13)</b> The infeed is faulty or has failed. Check the infeed and its environment (line supply, filters, reactors, fuses ...). Check the infeed control.	900C	12	27	24	11
<b>Braking controller / Braking Module faulted (14)</b> The internal or external Braking Module is faulted or overloaded (temperature). Check the connection/state of the Braking Module. Comply with the permissible number of braking operations and their duration.	900D	13	28	24	15
<b>Line filter fault (15)</b> The line filter monitoring has detected an excessively high temperature or another impermissible state. Check the temperature / temperature monitoring. Check the configuration to ensure that it is permissible (filter type, infeed, thresholds).	900E	14	17	24	15
<b>External measured value / signal state outside of the permissible range (16)</b> A measured value / signal state read in via the input area (digital/analog/temperature) has assumed an impermissible value/state. Identify and check the relevant signal. Check the set thresholds.	900F	15	29	26	15
<b>Application / technological function faulty (17)</b> The application / technological function has exceeded a (set) limit (position, velocity, torque ...). Identify and check the relevant limit. Check the setpoint specification of the higher-level controller.	9010	16	30	9	15
<b>Error in the parameterization/configuration/commissioning procedure (18)</b> An error was identified in the parameterization or in a commissioning procedure, or the parameterization does not match the actual device configuration. Determine the precise cause of the fault using the commissioning tool. Adapt the parameterization or device configuration.	9011	17	31	16	15
<b>General drive fault (19)</b> Group fault. Determine the precise cause of the fault using the commissioning tool.	9012	18	9	9	15
<b>Auxiliary unit fault (20)</b> The monitoring of an auxiliary unit (incoming transformer, cooling unit ...) has detected an illegal state. Determine the exact cause of the fault and check the relevant device.	9013	19	29	26	15

1. Undervoltage condition of the electronics power supply
2. Overvoltage condition of the electronics power supply

**Reaction: Default fault reaction (adjustable fault reaction)**

Specifies the default reaction in the event of a fault.

The optional parentheses indicate whether the default fault reactions can be changed and which fault reactions can be adjusted via parameters (p2100, p2101).

---

**Note**

See Table "Fault reactions" (Page 687)

---

**Acknowledgement: Default acknowledgement (adjustable acknowledgement)**

Specifies the default method of acknowledging faults after the cause has been eliminated.

The optional parentheses indicate whether the default acknowledgement can be changed and which acknowledgement can be adjusted via parameters (p2126, p2127).

---

**Note**

See Table "Acknowledging faults" (Page 689)

---

**Cause:**

Describes the possible causes of the fault or alarm. A fault or alarm value can also be specified (optional).

Fault value (r0949, format):

The fault value is entered into the fault buffer in r0949[0...63] and specifies additional, more precise information about a fault.


Alarm value (r2124, format):

The alarm value specifies additional, more precise information about an alarm.

The alarm value is entered in the alarm buffer in r2124[0...7] and specifies additional, more precise information about an alarm.

**Remedy:**

Description of the methods available for eliminating the cause of the active fault/alarm

 <b>WARNING</b>
In certain cases, servicing and maintenance personnel are responsible for choosing a suitable method for eliminating the cause of faults.

### 4.1.3 Number ranges of faults and alarms

#### Note

The following number ranges represent an overview of all faults and alarms used in the SINAMICS drive family.

The faults and alarms for the product described in this List Manual are described in detail in "List of faults and alarms" (Page 697).

Faults and alarms are organized into the following number ranges:

Table 4-5 Number ranges of faults and alarms

of	To	Area
1000	3999	Control Unit
4000	4999	Reserved
5000	5999	Power section
6000	6899	Infeed
6900	6999	Braking Module
7000	7999	Drive
8000	8999	Option Board
9000	12999	Reserved
13000	13020	Licensing
13021	13099	Reserved
13100	13102	Know-how protection
13103	19999	Reserved
20000	29999	OEM
30000	30999	DRIVE-CLiQ component power unit
31000	31999	DRIVE-CLiQ component encoder 1
32000	32999	DRIVE-CLiQ component encoder 2 <b>Note</b> Faults that occur are automatically output as an alarm if the encoder is parameterized as a direct measuring system and does not intervene in the motor control.
33000	33999	DRIVE-CLiQ component encoder 3 <b>Note</b> Faults that occur are automatically output as an alarm if the encoder is parameterized as a direct measuring system and does not intervene in the motor control.
34000	34999	Voltage Sensing Module (VSM)
35000	35199	Terminal Module 54F (TM54F)
35200	35999	Terminal Module 31 (TM31)
36000	36999	DRIVE-CLiQ Hub Module
37000	37999	HF Damping Module

## 4 Faults and alarms

### 4.1 Overview of faults and alarms

---

Table 4-5 Number ranges of faults and alarms, continued

<b>of</b>	<b>To</b>	<b>Area</b>
40000	40999	Controller Extension 32 (CX32)
41000	48999	Reserved
49000	49999	SINAMICS GM/SM/GL
50000	50499	Communication Board (COMM BOARD)
50500	59999	OEM Siemens
60000	65535	SINAMICS DC MASTER (closed-loop DC current control)



## 4.2 List of faults and alarms

Product: SINAMICS G120 CU240, Version: 4702900, Language: eng  
Objects: CU240B-2, CU240B-2\_DP, CU240E-2, CU240E-2\_DP, CU240E-2\_DP\_F, CU240E-2\_F, CU240E-2\_PN\_F, CU240E-2\_PN

---

<b>F01000</b>	<b>Internal software error</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	POWER ON
<b>Cause:</b>	An internal software error has occurred. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting.
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- evaluate fault buffer (r0945).</li><li>- carry out a POWER ON (power off/on) for all components.</li><li>- if required, check the data on the non-volatile memory (e.g. memory card).</li><li>- upgrade firmware to later version.</li><li>- contact the Hotline.</li><li>- replace the Control Unit.</li></ul>

---

<b>F01001</b>	<b>FloatingPoint exception</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	POWER ON
<b>Cause:</b>	An exception occurred during an operation with the FloatingPoint data type. The error may be caused by the basic system or an OA application (e.g., FBLOCKS, DCC). Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting. Note: Refer to r9999 for further information about this fault. r9999[0]: Fault number. r9999[1]: Program counter at the time when the exception occurred. r9999[2]: Cause of the FloatingPoint exception. Bit 0 = 1: Operation invalid Bit 1 = 1: Division by zero Bit 2 = 1: Overflow Bit 3 = 1: Underflow Bit 4 = 1: Inaccurate result
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- carry out a POWER ON (power off/on) for all components.</li><li>- check configuration and signals of the blocks in FBLOCKS.</li><li>- check configuration and signals of DCC charts.</li><li>- upgrade firmware to later version.</li><li>- contact the Hotline.</li></ul>

---

<b>F01002</b>	<b>Internal software error</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	An internal software error has occurred. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting.
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- carry out a POWER ON (power off/on) for all components.</li><li>- upgrade firmware to later version.</li><li>- contact the Hotline.</li></ul>

---

**F01003 Acknowledgement delay when accessing the memory**

**Message class:** Hardware / software error (1)  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** A memory area was accessed that does not return a "READY".  
Fault value (r0949, interpret hexadecimal):  
Only for internal Siemens troubleshooting.  
**Remedy:** - carry out a POWER ON (power off/on) for all components.  
- contact the Hotline.

---

**N01004 (F, A) Internal software error**

**Message class:** Hardware / software error (1)  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** An internal software error has occurred.  
Fault value (r0949, hexadecimal):  
Only for internal Siemens troubleshooting.  
**Remedy:** - read out diagnostics parameter (r9999).  
- contact the Hotline.  
See also: r9999 (Software error internal supplementary diagnostics)

---

**F01005 File upload/download error**

**Message class:** Hardware / software error (1)  
**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.

---

<b>A01009 (N)</b>	<b>CU: Control module overtemperature</b>
<b>Message class:</b>	Overtemperature of the electronic components (6)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The temperature (r0037[0]) of the control module (Control Unit) has exceeded the specified limit value.
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- check the air intake for the Control Unit.</li><li>- check the Control Unit fan.</li></ul> <p>Note: The alarm automatically disappears after the limit value has been undershot.</p>

---

<b>F01010</b>	<b>Drive type unknown</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	An unknown drive type was found.
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- replace Power Module.</li><li>- carry out a POWER ON (power off/on).</li><li>- upgrade firmware to later version.</li><li>- contact the Hotline.</li></ul>

---

<b>F01015</b>	<b>Internal software error</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	POWER ON
<b>Cause:</b>	An internal software error has occurred. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- carry out a POWER ON (power off/on) for all components.</li><li>- upgrade firmware to later version.</li><li>- contact the Hotline.</li></ul>

---

<b>A01016 (F)</b>	<b>Firmware changed</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	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)

---

<b>A01017</b>	<b>Component lists changed</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.

## 4 Faults and alarms

### 4.2 List of faults and alarms

Alarm value (r2124, interpret decimal):

zyx dec: x = Problem, y = Directory, z = File name

x = 1: File does not exist.

x = 2: Firmware version of the file does not match the software version.

x = 3: File checksum is incorrect.

y = 0: Directory /SIEMENS/SINAMICS/DATA/

y = 1: Directory /ADDON/SINAMICS/DATA/

z = 0: File MOTARM.ACX

z = 1: File MOTSRM.ACX

z = 2: File MOTSLM.ACX

z = 3: File ENCDATA.ACX

z = 4: File FILTDATA.ACX

z = 5: File BRKDATA.ACX

z = 6: File DAT\_BEAR.ACX

z = 7: File CFG\_BEAR.ACX

**Remedy:** For the file on the memory card involved, restore the status originally supplied from the factory.

---

#### **F01018 Booting has been interrupted several times**

**Message class:** Hardware / software error (1)

**Reaction:** NONE

**Acknowledge:** POWER ON

**Cause:** Module booting was interrupted several times. As a consequence, the module boots with the factory setting.

Possible reasons for booting being interrupted:

- power supply interrupted.

- CPU crashed.

- parameterization invalid.

**Remedy:** - carry out a POWER ON (power off/on). After switching on, the module reboots from the valid parameterization (if available).

- restore the valid parameterization.

Examples:

a) Carry out a first commissioning, save, carry out a POWER ON (switch-off/switch-on).

b) Load another valid parameter backup (e.g. from the memory card), save, carry out a POWER ON (switch-off/switch-on).

Note:

If the fault situation is repeated, then this fault is again output after several interrupted boots.

---

#### **A01019 Writing to the removable data medium unsuccessful**

**Message class:** Hardware / software error (1)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The write access to the removable data medium was unsuccessful.

**Remedy:** Remove and check the removable data medium. Then run the data backup again.

---

#### **A01020 Writing to RAM disk unsuccessful**

**Message class:** Hardware / software error (1)

**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)

---

<b>A01021</b>	<b>Removable data medium as USB data storage medium from the PC used</b>
<b>Message class:</b>	General drive fault (19)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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 Control Unit. See also: r7760 (Write protection/know-how protection status), r9401 (Safely remove memory card status)
<b>Remedy:</b>	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)

---

<b>F01023</b>	<b>Software timeout (internal)</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	An internal software timeout has occurred. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.
<b>Remedy:</b>	- carry out a POWER ON (power off/on) for all components. - upgrade firmware to later version. - contact the Hotline.

---

<b>A01028 (F)</b>	<b>Configuration error</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The parameterization that was downloaded was generated with a different module type (Order No., MLFB).
<b>Remedy:</b>	Save parameters in a non-volatile fashion (p0971 = 1).

---

<b>F01030</b>	<b>Sign-of-life failure for master control</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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.
<b>Remedy:</b>	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!

---

<b>F01033</b>	<b>Units changeover: Reference parameter value invalid</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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

## 4 Faults and alarms

### 4.2 List of faults and alarms

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.  
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004

---

#### **F01034      Units changeover: Calculation parameter values after reference value change unsuccessful**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** The change of a reference parameter meant that for an involved parameter the selected value was not able to be re-calculated in the per unit representation. The change was rejected and the original parameter value restored.  
Fault value (r0949, parameter):  
Parameter whose value was not able to be re-calculated.  
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004  
**Remedy:** - Select the value of the reference parameter such that the parameter involved can be calculated in the per unit representation.  
- Technology unit selection (p0595) before changing the reference parameter p0596, set p0595 = 1.  
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004

---

#### **A01035 (F)      ACX: Parameter back-up file corrupted**

**Message class:** Hardware / software error (1)  
**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**

**Message class:** Hardware / software error (1)  
**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  
This means that the parameter files are again completely written into the non-volatile memory.  
Note:  
If the project data have not been backed up, then a new first commissioning is required.

---

**F01038 (A)****ACX: Loading the parameter back-up file unsuccessful**

**Message class:** Hardware / software error (1)  
**Reaction:** NONE (OFF1, OFF2, OFF3)  
**Acknowledge:** IMMEDIATELY  
**Cause:** An error has occurred when downloading PSxxxxxyy.ACX or PTxxxxxyy.ACX files from the non-volatile memory.  
Fault value (r0949, interpret hexadecimal):  
Byte 1: yyy in the file name PSxxxxxyy.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**

**Message class:** Hardware / software error (1)  
**Reaction:** NONE (OFF1, OFF2, OFF3)  
**Acknowledge:** IMMEDIATELY  
**Cause:** Writing to at least one parameter back-up file PSxxxxxyy.\*\*\* in the non-volatile memory was unsuccessful.  
- In the directory /USER/SINAMICS/DATA/ at least one parameter back-up file PSxxxxxyy.\*\*\* 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 PSxxxxxyy.\*\*\*  
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.

## 4 Faults and alarms

### 4.2 List of faults and alarms

- Remedy:**
- check the file attribute of the files (PSxxxxyy.\*\*, CAxxxxyy.\*\*, CCxxxxyy.\*\*) 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**

- Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Reaction:** OFF2  
**Acknowledge:** 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**

- Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Reaction:** OFF2 (NONE, OFF1, OFF3)  
**Acknowledge:** IMMEDIATELY  
**Cause:** An error was detected when downloading a project using the commissioning software (e.g. incorrect parameter value).  
For the specified parameter, it was detected that dynamic limits were exceeded that may possibly depend on other parameters.  
Fault value (r0949, interpret hexadecimal):  
ccbbaaaa 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.



---

<b>F01043</b>	<b>Fatal error at project download</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2 (OFF1, OFF3)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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" (r0947 and r0949). 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 communication error). Additional values: Only for internal Siemens troubleshooting.
<b>Remedy:</b>	- 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 (switch-off/switch-on or p0970).

---

<b>F01044</b>	<b>CU: Descriptive data error</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	POWER ON
<b>Cause:</b>	An error was detected when loading the descriptive data saved in the non-volatile memory.
<b>Remedy:</b>	Replace the memory card or Control Unit.

---

<b>A01045</b>	<b>Configuring data invalid</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	An error was detected when evaluating the parameter files PSxxxxxyy.ACX, PTxxxxyyy.ACX, CAxxxxyyy.ACX, or CCxxxxyyy.ACX saved in the non-volatile memory. Because of this, under certain circumstances, several of the saved parameter values were not able to be accepted. Also see r9406 up to r9408. Alarm value (r2124, interpret hexadecimal): Only for internal Siemens troubleshooting.
<b>Remedy:</b>	- 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. Then save the parameterization in STARTER using the "Copy RAM to ROM" function or with p0971 = 1. This overwrites the incorrect parameter files in the non-volatile memory – and the alarm is withdrawn.

---

<b>A01049</b>	<b>It is not possible to write to file</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	It is not possible to write into a write-protected file (PSxxxxx.acx). The write request was interrupted. Alarm value (r2124, interpret decimal): Drive object number.
<b>Remedy:</b>	Check whether the "write protected" attribute has been set for the files in the non-volatile memory under .../USER/SINAMICS/DATA/... When required, remove write protection and save again (e.g. set p0971 to 1).

---

<b>F01054</b>	<b>CU: System limit exceeded</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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]). Note: As long as this fault is present, it is not possible to save the parameters (p0971). See also: r9976 (System utilization)
<b>Remedy:</b>	Re fault value = 1, 5: <ul style="list-style-type: none"><li>- reduce the computing time load of the drive unit (r9976[1] and r9976[5]) to under 100 %.</li><li>- check the sampling times and adjust if necessary (p0115, p0799, p4099).</li><li>- de-activate function modules.</li><li>- de-activate drive objects.</li><li>- remove drive objects from the target topology.</li><li>- note the DRIVE-CLiQ topology rules and if required, change the DRIVE-CLiQ topology.</li></ul> When using the Drive Control Chart (DCC) or free function blocks (FBLOCKS), the following applies <ul style="list-style-type: none"><li>- the computing time load of the individual run-time groups on a drive object can be read out in r21005 (DCC) or r20005 (FBLOCKS).</li><li>- if necessary, the assignment of the run-time group (p21000, p20000) can be changed in order to increase the sampling time (r21001, r20001).</li><li>- if necessary, reduce the number of cyclically calculated blocks (DCC) and/or function blocks (FBLOCKS).</li></ul>

---

<b>A01064 (F)</b>	<b>CU: Internal error (CRC)</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	CRC error in the Control Unit program memory
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- carry out a POWER ON (power off/on) for all components.</li><li>- upgrade firmware to later version.</li><li>- contact the Hotline.</li></ul>

---

<b>A01066</b>	<b>Buffer memory: 70% fill level reached or exceeded</b>
<b>Message class:</b>	General drive fault (19)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	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)

---

<b>A01067</b>	<b>Buffer memory: 100 % fill level reached</b>
<b>Message class:</b>	General drive fault (19)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	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)

---

<b>F01068</b>	<b>CU: Data memory memory overflow</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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
<b>Remedy:</b>	- de-activate the function module. - de-activate drive object. - remove the drive object from the target topology.

---

<b>A01069</b>	<b>Parameter backup and device incompatible</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	- 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).

## 4 Faults and alarms

### 4.2 List of faults and alarms

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<b>F01072</b>	<b>Memory card restored from the backup copy</b>
<b>Message class:</b>	General drive fault (19)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The Control Unit was switched-off while writing to the memory card. This is why the visible partition became defective. After switching on, the data from the non-visible partition (backup copy) were written to the visible partition.
<b>Remedy:</b>	Check that the firmware and parameterization is up-to-date.

---

<b>A01073 (N)</b>	<b>POWER ON required for backup copy on memory card</b>
<b>Message class:</b>	General drive fault (19)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The parameter assignment on the visible partition of the memory card has changed. In order that the backup copy on the memory card is updated on the non-visible partition, it is necessary to carry out a POWER ON or hardware reset (p0972) of the Control Unit. Note: It is possible that a new POWER ON is requested via this alarm (e.g. after saving with p0971 = 1).
<b>Remedy:</b>	- carry out a POWER ON (power off/on) for the Control Unit. - carry out a hardware reset (RESET button, p0972).

---

<b>F01105 (A)</b>	<b>CU: Insufficient memory</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF1
<b>Acknowledge:</b>	POWER ON
<b>Cause:</b>	Too many data sets are configured on this Control Unit. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.
<b>Remedy:</b>	- reduce the number of data sets.

---

<b>F01107</b>	<b>Save to memory card unsuccessful</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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.
<b>Remedy:</b>	- try to save again. - replace the memory card or Control Unit.

---

<b>F01112</b>	<b>CU: Power unit not permissible</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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).
<b>Remedy:</b>	Replace the power unit that is not permissible by a component that is permissible.

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**F01120 (A) Terminal initialization has failed**

**Message class:** Hardware / software error (1)  
**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.

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**F01122 (A) Frequency at the measuring probe input too high**

**Message class:** Application / technological function faulted (17)  
**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.

---

**F01152 CU: Invalid constellation of drive object types**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Reaction:** NONE  
**Acknowledge:** POWER ON  
**Cause:** It is not possible to simultaneously operate drive object types SERVO, VECTOR and HLA.  
A maximum of 2 of these drive object types can be operated on a Control Unit.  
**Remedy:**  
- power down the unit.  
- restrict the use of drive object types SERVO, VECTOR, HLA to a maximum of 2.  
- re-commission the unit.

---

**F01205 CU: Time slice overflow**

**Message class:** Hardware / software error (1)  
**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**

**Message class:** Hardware / software error (1)  
**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.

<b>A01251</b>	<b>CU: CU-EEPROM incorrect read-write data</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	Error when reading the read-write data of the EEPROM in the Control Unit. Alarm value (r2124, interpret decimal): Only for internal Siemens troubleshooting.
<b>Remedy:</b>	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.
<b>F01257</b>	<b>CU: Firmware version out of date</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	POWER ON
<b>Cause:</b>	The Control Unit firmware is too old. Fault value (r0949, interpret hexadecimal): bbbbbaa 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.
<b>Remedy:</b>	Re fault value = 1, 2, 4: - 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.
<b>F01340</b>	<b>Topology: Too many components on one line</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	For the selected communications clock cycle, too many DRIVE-CLiQ components are connected to one line of the Control Unit. Fault value (r0949, interpret hexadecimal): xyy hex: x = fault cause, yy = component number or connection number. 1yy: The communications clock cycle of the DRIVE-CLiQ connection on the Control Unit is not sufficient for all read transfers. 2yy: The communications clock cycle of the DRIVE-CLiQ connection on the Control Unit is not sufficient for all write transfers. 3yy: Cyclic communication is fully utilized. 4yy: The DRIVE-CLiQ cycle starts before the earliest end of the application. An additional dead time must be added to the control. Sign-of-life errors can be expected. The conditions of operation with a current controller sampling time of 31.25 µs have not been maintained.

5yy:  
Internal buffer overflow for net data of a DRIVE-CLiQ connection.

6yy:  
Internal buffer overflow for receive data of a DRIVE-CLiQ connection.

7yy:  
Internal buffer overflow for send data of a DRIVE-CLiQ connection.

8yy:  
The component clock cycles cannot be combined with one another

900:  
The lowest common multiple of the clock cycles in the system is too high to be determined.

901:  
The lowest common multiple of the clock cycles in the system cannot be generated with the hardware.

**Remedy:**

- check the DRIVE-CLiQ wiring.
- Reduce the number of components on the DRIVE-CLiQ line involved and distribute these to other DRIVE-CLiQ sockets of the Control Unit. This means that communication is uniformly distributed over several lines.

Re fault value = 1yy - 4yy in addition:

- increase the sampling times (p0112, p0115, p4099). If necessary, for DCC or FBLOCKS, change the assignment of the run-time group (p21000, p20000) so that the sampling time (r21001, r20001) is increased.
- if necessary, reduce the number of cyclically calculated blocks (DCC) and/or function blocks (FBLOCKS).
- reduce the function modules (r0108).
- establish the conditions for operation with a current controller sampling time of 31.25 µs (at the DRIVE-CLiQ line, only operate Motor Modules and Sensor Modules with this sampling time and only use a permitted Sensor Module (e.g. SMC20, this means a 3 at the last position of the order number)).
- For an NX, the corresponding Sensor Module for a possibly existing second measuring system should be connected to a free DRIVE-CLiQ socket of the NX.

Re fault value = 8yy in addition:

- check the clock cycles settings (p0112, p0115, p4099). Clock cycles on a DRIVE-CLiQ line must be perfect integer multiples of one another. As clock cycle on a line, all clock cycles of all drive objects in the previously mentioned parameters apply, which have components on the line involved.

Re fault value = 9yy in addition:

- check the clock cycles settings (p0112, p0115, p4099). The lower the numerical value difference between two clock cycles, the higher the lowest common multiple. This behavior has a significantly stronger influence, the higher the numerical values of the clock cycles.

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<b>F01505 (A)</b>	<b>BICO: Interconnection cannot be established</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	A PROFIdrive telegram has been set (p0922). An interconnection contained in the telegram was not able to be established. Fault value (r0949, interpret decimal): Parameter receiver that should be changed.
<b>Remedy:</b>	Establish another interconnection.

---

<b>F01510</b>	<b>BICO: Signal source is not float type</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The requested connector output does not have the correct data type. This interconnection is not established. Fault value (r0949, interpret decimal): Parameter number to which an interconnection should be made (connector output).
<b>Remedy:</b>	Interconnect this connector input with a connector output having a float data type.

---

<b>F01511 (A)</b>	<b>BICO: Interconnection with different scalings</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The requested BICO interconnection was established. However, a conversion is made between the BICO output and BICO input using the reference values. - the BICO output has different normalized units than the BICO input. - message only for interconnections within a drive object. Example: The BICO output has, as normalized unit, voltage and the BICO input has current. This means that the factor p2002/p2001 is calculated between the BICO output and the BICO input. p2002: contains the reference value for current p2001: contains the reference value for voltage Fault value (r0949, interpret decimal): Parameter number of the BICO input (signal sink).
<b>Remedy:</b>	Not necessary.

---

<b>F01512</b>	<b>BICO: No scaling available</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	POWER ON
<b>Cause:</b>	An attempt was made to determine a conversion factor for a scaling that does not exist. Fault value (r0949, interpret decimal): Unit (e.g. corresponding to SPEED) for which an attempt was made to determine a factor.
<b>Remedy:</b>	Apply scaling or check the transfer value.

---

<b>F01513 (N, A)</b>	<b>BICO: Interconnection cross DO with different scalings</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The requested BICO interconnection was established. However, a conversion is made between the BICO output and BICO input using the reference values. An interconnection is made between different drive objects and the BICO output has different normalized units than the BICO input or the normalized units are the same but the reference values are different. Example 1: BICO output with voltage normalized unit, BICO input with current normalized unit, BICO output and BICO input lie in different drive objects. This means that the factor p2002/p2001 is calculated between the BICO output and the BICO input. p2002: contains the reference value for current p2001: contains the reference value for voltage Example 2: BICO output with voltage normalized unit in drive object 1 (DO1), BICO input with voltage normalized unit in drive object 2 (DO2). The reference values for voltage (p2001) of the two drive objects have different values. This means that the factor p2001(DO1)/p2001(DO2) is calculated between the BICO output and the BICO input. p2001: contains the reference value for voltage, drive objects 1, 2 Fault value (r0949, interpret decimal): Parameter number of the BICO input (signal sink).
<b>Remedy:</b>	Not necessary.

---

<b>A01514 (F)</b>	<b>BICO: Error when writing during a reconnect</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	During a reconnect operation (e.g. while booting or downloading - but can also occur in normal operation) a parameter was not able to be written to.



Example:

When writing to BICO input with double word format (DWORD), in the second index, the memory areas overlap (e.g. p8861). The parameter is then reset to the factory setting.

Alarm value (r2124, interpret decimal):

Parameter number of the BICO input (signal sink).

**Remedy:** Not necessary.

---

**F01515 (A) BICO: Writing to parameter not permitted as the master control is active**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Reaction:** NONE

**Acknowledge:** IMMEDIATELY

**Cause:** When changing the number of CDS or when copying from CDS, the master control is active.

**Remedy:** If required, return the master control and repeat the operation.

---

**A01590 (F) Drive: Motor maintenance interval expired**

**Message class:** General drive fault (19)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The selected service/maintenance interval for this motor was reached.

Alarm value (r2124, interpret decimal):

Motor data set number.

See also: p0650 (Actual motor operating hours), p0651 (Motor operating hours maintenance interval)

**Remedy:** carry out service/maintenance and reset the service/maintenance interval (p0651).

---

**F01600 SI P1 (CU): STOP A initiated**

**Message class:** Safety monitoring channel has identified an error (10)

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** The drive-integrated "Safety Integrated" 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.

1011: Internal fault for the pulse enable in the Power Module.

9999: Subsequent response to fault F01611.

**Remedy:** - select Safe Torque Off and de-select again.

- carry out a POWER ON (power off/on) for all components.

- replace Power Module involved.

For fault value = 9999:

- carry out diagnostics for fault F01611.

Note:

STO: Safe Torque Off

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**F01611 (A) SI P1 (CU): Defect in a monitoring channel**

**Message class:** Safety monitoring channel has identified an error (10)

**Reaction:** NONE (OFF1, OFF2, OFF3)

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** 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 PROFIsafe address (p9610, p9810).
- 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 signal changes 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 signals of safe pulse suppression on the two monitoring channels are different.
- 2002: Statuses of the delay timer SS1 on both monitoring channels are different (status of the timer in p9650/p9850).
- 2003: Status of the STO terminal for both monitoring channels are different.
- 6000 ... 6166:  
PROFIsafe fault values (PROFIsafe driver for PROFIBUS DP V1/V2 and PROFINET).  
For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
- 6000: 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).
- 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.
- 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.
  - check the tolerance time F-DI changeover and if required, increase the value (p9650/p9850).
- Re fault value = 1001, 1002:
- carry out a POWER ON (power off/on).
- Re fault value = 2000, 2001, 2002, 2003:
- 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.
- For fault value = 6000:
- carry out a POWER ON (power off/on).
  - upgrade firmware to later version.
  - contact the Hotline.
  - replace Control Unit.
- For fault 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).

For fault 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!

For fault 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!

For fault 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!

For fault 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!

For fault 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!

For fault 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!

For fault 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.

For fault 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

For fault 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.

- check whether all F parameters of the drive match the F parameters of the F host.

For fault 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.

- check whether all F parameters of the drive match the F parameters of the F host.

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

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<b>N01620 (F, A)</b>	<b>SI P1 (CU): Safe Torque Off active</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	Not necessary.
	Note:
	STO: Safe Torque Off

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<b>F01625</b>	<b>SI P1 (CU): Sign-of-life error in safety data</b>
<b>Message class:</b>	Internal (DRIVE-CLiQ) communication error (12)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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.
<b>Remedy:</b>	- 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

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<b>F01640</b>	<b>SI P1 (CU): component replacement identified and acknowledgment/save required</b>
<b>Message class:</b>	General drive fault (19)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The "Safety Integrated" function integrated in the drive has identified that a component has been replaced. It is no longer possible to operate the drive. When safety functions are active, after a component has been replaced it is necessary to carry out a partial acceptance test. Fault value (r0949, interpret binary): Bit 0 = 1: It has been identified that the Control Unit has been replaced. Bit 1 = 1: It has been identified that the Motor Module/Hydraulic Module has been replaced. Bit 2 = 1: It has been identified that the Power Module has been replaced. Bit 3 = 1: It has been identified that the Sensor Module channel 1 has been replaced. Bit 4 = 1: It has been identified that the Sensor Module channel 2 has been replaced. Bit 5 = 1: It has been identified that the sensor channel 1 has been replaced. Bit 6 = 1: It has been identified that the sensor channel 2 has been replaced.
<b>Remedy:</b>	- acknowledge component replacement (p9702 = 29). - save all parameters (p0977 = 1 or p0971 = 1 or "copy RAM to ROM"). - acknowledge fault (e.g. BI: p2103). Note: In addition to the fault, diagnostics bits r9776.2 and r9776.3 are set. See also: r9776 (SI diagnostics)

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<b>F01641</b>	<b>SI P1 (CU): component replacement identified and save required</b>
<b>Message class:</b>	General drive fault (19)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The "Safety Integrated" function integrated in the drive has identified that a component has been replaced. No additional fault response is initiated, therefore operation of the particular drive is not restricted. When safety functions are active, after a component has been replaced it is necessary to carry out a partial acceptance test.

Fault value (r0949, interpret binary):

Bit 0 = 1:

It has been identified that the Control Unit has been replaced.

Bit 1 = 1:

It has been identified that the Motor Module/Hydraulic Module has been replaced.

Bit 2 = 1:

It has been identified that the Power Module has been replaced.

Bit 3 = 1:

It has been identified that the Sensor Module channel 1 has been replaced.

Bit 4 = 1:

It has been identified that the Sensor Module channel 2 has been replaced.

Bit 5 = 1:

It has been identified that the sensor channel 1 has been replaced.

Bit 6 = 1:

It has been identified that the sensor channel 2 has been replaced.

**Remedy:**

- save all parameters (p0977 = 1 or p0971 = 1 or "copy RAM to ROM").
- acknowledge fault (e.g. BI: p2103).

See also: r9776 (SI diagnostics)

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### F01649

### SI P1 (CU): Internal software error

**Message class:** Hardware / software error (1)

**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.

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### F01650

### SI P1 (CU): Acceptance test required

**Message class:** Safety monitoring channel has identified an error (10)

**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.

2000: Reference and actual checksum on processor 1 are not identical (commissioning mode).

- reference checksum incorrectly 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).  
 Re 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.  
 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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<b>F01651</b>	<b>SI P1 (CU): Synchronization safety time slices unsuccessful</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	The "Safety Integrated" function requires synchronization of the safety time slices between 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.
<b>Remedy:</b>	Carry out a POWER ON (power off/on).

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<b>F01653</b>	<b>SI P1 (CU): PROFIBUS/PROFINET configuration error</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE (OFF1, OFF2, OFF3)
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	There is a PROFIBUS/PROFINET configuration error for using Safety Integrated monitoring functions with a higher-level control. Note: For safety functions that have been enabled, this fault results in a STOP A that cannot be acknowledged. Fault value (r0949, interpret decimal): 200: A safety slot for receive data from the control has not been configured. 210, 220: The configured safety slot for the receive data from the control has an unknown format. 230: The configured safety slot for the receive data from the F-PLC has the incorrect length.

231: The configured safety slot for the receive data from the F-PLC has the incorrect length.  
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.

**Remedy:**

The following generally applies:

- check and, if necessary, correct the PROFIBUS/PROFINET configuration of the safety slot on the master side.
- upgrade the Control Unit software.

For fault value = 250:

- remove the PROFIsafe configuring in the higher-level F control or enable PROFIsafe in the drive.

Re fault value = 231, 331:

- configure the PROFIsafe telegram matching the parameterization in the F-PLC.

The following applies for p9501.30 = 1 (F-DI via PROFIsafe is enabled):

- PROFIsafe telegram 900 must be configured.

For p9501.30 = 0 (F-DI not enabled via PROFIsafe), the following applies:

- PROFIsafe telegram 30 must be configured.

---

**A01654 (F)**

**SI P1 (CU): Deviating PROFIsafe configuration**

**Message class:**

Error in the parameterization / configuration / commissioning procedure (18)

**Reaction:**

NONE

**Acknowledge:**

NONE

**Cause:**

The configuration of a PROFIsafe telegram in the higher-level control (F-PLC) does not match the parameterization in the drive.

Note:

This message does not result in a safety stop response.

Alarm value (r2124, interpret decimal):

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 (CU): Align monitoring functions**

**Message class:**

Error in the parameterization / configuration / commissioning procedure (18)

**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

---

**F01656 SI P1 (CU): Parameter processor 2 error**

<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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.
<b>Remedy:</b>	- 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

---

**F01658 SI P1 (CU): PROFIsafe telegram number not suitable**

<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	The PROFIsafe telegram number in p60022 is unsuitable for the enabled safety functions. Possible causes: - When PROFIsafe is not enabled (p9601.3 = 0), then it is not permissible to select a PROFIsafe telegram in p60022. - When PROFIsafe is enabled (p9601.3 = 1), then a PROFIsafe telegram must be selected in p60022. - When the transfer of the F-DIs via PROFIsafe (p9501.30 = 1) is selected, then telegram 900 must be selected in p60022 (this only applies to Control Units, which support Extended Functions via PROFIsafe (r9771.4 = 1)). Note: This fault does not result in a safety stop response. See also: p9501, p9601, p60022
<b>Remedy:</b>	Select the telegram number that matches the Safety functions that have been enabled.

---

**F01659 SI P1 (CU): Write request for parameter rejected**

<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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.

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 (CU): Safety-related functions not supported****Message class:**

Error in the parameterization / configuration / commissioning procedure (18)

**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 P1 (CU): Simulation of the safety inputs active****Message class:**

General drive fault (19)

**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 are simulated.

Fault value (r0949, interpret binary):

The displayed bits indicate which digital inputs must not be simulated.

**Remedy:**

- Deactivate the simulation of the digital inputs of the Control Unit for the safety inputs (p0795).

- acknowledge fault.

---

**F01662 Error internal communications**

**Message class:** Hardware / software error (1)  
**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 (CU): Copying the SI parameters rejected**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** In p9700, the value 87 or 208 is saved or was entered offline.  
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 (CU): System is defective**

**Message class:** Hardware / software error (1)  
**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.  
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.

---

**A01666 (F) SI Motion P1 (CU): Steady-state (static) 1 signal at the F-DI for safe acknowledgment**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**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

<b>A01669 (F, N)</b>	<b>SI Motion: Unfavorable combination of motor and power unit</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	Use a suitable power unit with a lower power rating or a motor with a higher power rating.
<b>F01680</b>	<b>SI Motion P1 (CU): Checksum error safety monitoring functions</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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.
<b>Remedy:</b>	- 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.
<b>F01681</b>	<b>SI Motion P1 (CU): Incorrect parameter value</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	The parameter cannot be parameterized with this value. Note: This fault does not result in a safety stop response. Fault value (r0949, interpret decimal): yyyyxxxx dec: yyyy = supplementary information, xxxx = parameter yyyy = 0: No information available. xxxx = 9501: It is not permissible to enable the function "n < nx hysteresis and filtering" (p9501.16) in conjunction with the function "Extended functions without selection" (p9601.5). xxxx = 9522: The gear stage was set too high. xxxx = 9547: Parameter p9547 has been set too low. xxxx = 9585: For Safety without encoder and synchronous motor, p9585 must be set to 4.

## 4 Faults and alarms

### 4.2 List of faults and alarms

**Remedy:** Correct the parameter value.  
If xxxx = 9547:  
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  
If xxxx = 9522 and 9585:  
Correct the parameter value.

---

#### F01682

#### SI Motion P1 (CU): Monitoring function not supported

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**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).
- 28: Encoderless monitoring functions are not supported for synchronous motors (p9507.2).

**Remedy:** Deselect the monitoring function involved (p9501, p9601, p9801).

**Note:**

SCA: Safe Cam

SDI: Safe Direction (safe motion direction)

SLP: Safely-Limited Position

SLS: Safely-Limited Speed

See also: p9501 (SI Motion enable safety functions (processor 1)), r9771 (SI common functions (processor 1))

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#### F01683

#### SI Motion P1 (CU): SLS enable missing

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**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: Safely-Limited Speed

See also: p9501 (SI Motion enable safety functions (processor 1))

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<b>F01690</b>	<b>SI Motion: Data save problem for the NVRAM</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	NONE (OFF1, OFF2, OFF3)
<b>Acknowledge:</b>	POWER ON
<b>Cause:</b>	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.
<b>Remedy:</b>	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)

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<b>F01692</b>	<b>SI Motion P1 (CU): Parameter value not permitted for encoderless</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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))
<b>Remedy:</b>	Correct the parameter specified in the fault value. See also: p9501 (SI Motion enable safety functions (processor 1))

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<b>A01693 (F)</b>	<b>SI P1 (CU): Safety parameter setting changed, POWER ON required</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	- execute the function "Copy RAM to ROM". - carry out a POWER ON (power off/on).

---

<b>A01696 (F)</b>	<b>SI Motion: Testing of the motion monitoring functions selected when booting</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The test of the motion monitoring functions was already illegally active when booting. This is the reason that the test is only carried out again after selecting the forced checking procedure parameterized in p9705. Note: This message does not result in a safety stop response. See also: p9705 (SI Motion: Test stop signal source)

## 4 Faults and alarms

### 4.2 List of faults and alarms

---

**Remedy:** De-select the forced checking procedure of the safety motion monitoring functions and then select again.  
The signal source for initiation is parameterized in binector input p9705.  
See also: p9705 (SI Motion: Test stop signal source)

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#### **A01697 (F) SI Motion: Motion monitoring functions must be tested**

**Message class:** Safety monitoring channel has identified an error (10)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The time set in p9559 for the forced checking procedure of the safety motion monitoring functions has been exceeded. A new test is required.  
After next selecting the forced checking procedure parameterized in p9705, the message is withdrawn and the monitoring time is reset.

**Note:**

- This message does not result in a safety stop response.
- As the shutdown paths are not automatically checked during booting, an alarm is always issued once booting is complete.
- The test must be performed within a defined, maximum time interval (p9559, maximum of 9000 hours) in order to comply with the requirements as laid down in the standards for timely fault detection and the conditions to calculate the failure rates of safety functions (PFH value). Operation beyond this maximum time period is permissible if it can be ensured that the forced checking procedure is performed before persons enter the hazardous area and who are depending on the safety functions correctly functioning.

See also: p9559 (SI Motion forced checking procedure timer (processor 1)), p9705 (SI Motion: Test stop signal source)

**Remedy:** Carry out the forced checking procedure of the safety motion monitoring functions.

The signal source for initiation is parameterized in binector input p9705.

See also: p9705 (SI Motion: Test stop signal source)

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#### **A01698 (F) SI P1 (CU): Commissioning mode active**

**Message class:** General drive fault (19)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The commissioning of the "Safety Integrated" function is selected.  
This message is withdrawn after the safety functions have been commissioned.

**Note:**

- This message does not result in a safety stop response.
- In the safety commissioning mode, the "STO" function is internally selected.

See also: p0010 (Drive commissioning parameter filter)

**Remedy:** Not necessary.

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#### **A01699 (F) SI P1 (CU): Shutdown path must be tested**

**Message class:** Safety monitoring channel has identified an error (10)

**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

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<b>C01700</b>	<b>SI Motion P1 (CU): STOP A initiated</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	The drive is stopped via a STOP A (pulses are suppressed via the safety shutdown path of processor 1). Possible causes: <ul style="list-style-type: none"><li>- stop request from processor 2.</li><li>- Pulses not suppressed after test stop selection.</li><li>- subsequent response to the message C01706 "SI Motion P1: SAM/SBR limit exceeded".</li><li>- Subsequent response to the message C01714 "SI Motion P1: Safely-Limited Speed exceeded".</li><li>- Subsequent response to the message C01701 "SI Motion P1: STOP B initiated".</li></ul>
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- remove the cause of the fault on the monitoring channel of processor 2.</li><li>- carry out a diagnostics routine for message C01706.</li><li>- carry out a diagnostics routine for message C01714.</li><li>- carry out a diagnostics routine for message C01701.</li><li>- check the shutdown path of processor 1.</li><li>- replace Power Module.</li><li>- replace Control Unit.</li></ul> This message can be acknowledged without a POWER ON using "Acknowledge internal event": Note: SAM: Safe Acceleration Monitor (safe acceleration monitoring) SBR: Safe Brake Ramp (safe brake ramp monitoring)
<hr/>	
<b>C01701</b>	<b>SI Motion P1 (CU): STOP B initiated</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE (OFF3)
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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: <ul style="list-style-type: none"><li>- stop request from processor 2.</li><li>- Subsequent response to the message C01714 "SI Motion P1: Safely-Limited Speed exceeded".</li><li>- subsequent response to the message C01711 "SI Motion P1: Defect in a monitoring channel".</li><li>- subsequent response to the message C01707 "SI Motion P1: tolerance for safe operating stop exceeded".</li></ul>
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- remove the cause of the fault on the monitoring channel of processor 2.</li><li>- carry out a diagnostics routine for message C01714.</li><li>- carry out a diagnostics routine for message C01711.</li><li>- carry out a diagnostics routine for message C01707.</li></ul> This message can be acknowledged without a POWER ON using "Acknowledge internal event".
<hr/>	
<b>C01706</b>	<b>SI Motion P1 (CU): SAM/SBR limit exceeded</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	Motion monitoring functions with set acceleration monitoring (SAM, p9506 = 3): <ul style="list-style-type: none"><li>- after initiating STOP B (SS1) the velocity has exceeded the selected tolerance.</li></ul> Motion monitoring functions with set brake ramp monitoring (SBR, p9506 = 1): <ul style="list-style-type: none"><li>- after initiating STOP B (SS1) or SLS changeover to the lower speed stage, the speed has exceeded the selected tolerance.</li></ul> The drive is shut down by the message C01700 "SI Motion: STOP A initiated".
<b>Remedy:</b>	Check the braking behavior and, if necessary, adapt the parameterization of the parameter settings of the "SAM" or the "SBR" function. This message can be acknowledged without a POWER ON using "Acknowledge internal event".

Note:

SAM: Safe Acceleration Monitor (safe acceleration monitoring)

SBR: Safe Brake Ramp (safe brake ramp monitoring)

SI: Safety Integrated

See also: p9548, p9581, p9582, p9583

**C01711**

**SI Motion P1 (CU): Defect in a monitoring channel**

**Message class:** Safety monitoring channel has identified an error (10)

**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[0/1]) 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) Safety monitoring clock cycle too small (p9500/p9300).

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[0/1]). If the safe actual values on the two monitoring channels do not match, the limit values, which have been set at a defined interval, will also be different (i.e. corresponding to fault value 3). This can be ascertained by checking the safe actual positions.

44: Position actual value (r9713[0/1]) + limit value SLS1 (p9531[0]/p9331[0]) \* safety monitoring clock cycle (12 ms).

45: Position actual value (r9713[0/1]) - limit value SLS1 (p9531[0]/p9331[0]) \* safety monitoring clock cycle (12 ms).

46: Position actual value (r9713[0/1]) + limit value SLS2 (p9531[1]/p9331[1]) \* safety monitoring clock cycle (12 ms).

47: Position actual value (r9713[0/1]) - limit value SLS2 (p9531[1]/p9331[1]) \* safety monitoring clock cycle (12 ms).

48: Position actual value (r9713[0/1]) + limit value SLS3 (p9531[2]/p9331[2]) \* safety monitoring clock cycle (12 ms).

49: Position actual value (r9713[0/1]) - limit value SLS3 (p9531[2]/p9331[2]) \* safety monitoring clock cycle (12 ms).

50: Position actual value (r9713[0/1]) + limit value SLS4 (p9531[3]/p9331[3]) \* safety monitoring clock cycle (12 ms).

51: Position actual value (r9713[0/1]) - limit value SLS4 (p9531[3]/p9331[3]) \* safety monitoring clock cycle (12 ms).

54: Position actual value (r9713[0/1]) + limit value nx (p9546/p9346) \* safety monitoring clock cycle (12 ms) + tolerance (p9542/p9342).

55: Position actual value (r9713[0/1]) + limit value nx (p9546/p9346) \* safety monitoring clock cycle (12 ms).

56: Position actual value (r9713[0/1]) - limit value nx (p9546/p9346) \* safety monitoring clock cycle (12 ms).

57: Position actual value (r9713[0/1]) - limit value nx (p9546/p9346) \* safety monitoring clock cycle (12 ms) - 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 (7FFFFFFF hex).
- 249: Position actual value (r9713[0/1]) - SDI tolerance (p9564/p9364).
- 250: Position actual value (r9713[0/1]) + SDI tolerance (p9564/p9364).
- 251: SDI negative lower limit (80000001 hex).
- 252: SDI stop response (p9566/p9366).
- 253: SDI delay time (p9565/p9365).
- 254: Setting, behavior during pulse suppression (p9509/p9309).
- 256: Status image of monitoring functions SOS, SLS, SLP, test stop, SBR, SDI (result list 1 ext) (r9710).
- 258: Fault tolerance, actual value sensing encoderless (p9585/p9385).
- 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 ... 6999:

Error in the PROFIsafe control.

For these message values, the failsafe control signals (failsafe values) are transferred to the safety functions.

The significance of the individual message values is described in safety fault F01611.

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).

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.

- increase the minimum current (p9588).

Re message value = 1043:

- increase the voltage tolerance (p9589).

- increase the ramp-function generator ramp-up/down time (p1120/p1121).

- check that the current/speed control is set correctly (torque-generating/field-generating current and actual speed value may not fluctuate).

- reduce the dynamic response of the setpoint value.

Re message value = 6000 ... 6999:

Refer to the description of the message values in safety fault F01611.

This message can be acknowledged using "Acknowledge internal event".

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#### **C01712 SI Motion P1 (CU): Defect in F-I/O processing**

**Message class:** Safety monitoring channel has identified an error (10)

**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-I/O processing and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.

The safety message C01711 with message value 0 is also displayed due to initiation of STOP F.

If at least one monitoring function is active, 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 acknowledgment 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.

Note:

F-DI: Failsafe Digital Input

SLS: Safely-Limited Speed

SS1: Safe Stop 1

STO: Safe Torque Off

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**C01714 SI Motion P1 (CU): Safely-Limited Speed exceeded**

**Message class:** Safety monitoring channel has identified an error (10)

**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 limits for SLS and if required adapt accordingly (p9531).

This message can be acknowledged using "Acknowledge internal event".

Note:

SLS: Safely-Limited Speed

See also: p9531 (SI Motion SLS limit values (processor 1)), p9563 (SI Motion SLS-specific stop response (processor 1))

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**C01716 SI Motion P1 (CU): Tolerance for safe motion direction exceeded**

**Message class:** Safety monitoring channel has identified an error (10)

**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 (r2124, 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.

- carry out safe acknowledgment via "Acknowledgment internal event".

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))

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<b>C01770</b>	<b>SI Motion P1 (CU): Discrepancy error of the fail-safe inputs</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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 message is only signaled for the first error that occurs.
<b>Remedy:</b>	- 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 corresponds to twice the value of p10002, then the following formulas should be checked: - $p10002 < (tp / 2) - td$ (discrepancy time must be less than half the period minus the actual discrepancy time) - $p10002 \geq p9500$ (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 monitoring cycle (see p9500). tp = period for a switching operation in ms. When debounce p10017 is active, the discrepancy time is directly specified by the debounce time. If the period of a cyclic switching pulse corresponds to twice the debounce time, then the following formulas should be checked. - $p10002 < p10017 + 1 \text{ ms} - td$ - $p10002 > td$ - $p10002 \geq p9500$ Example: For a 12 ms SI monitoring cycle and a switching frequency of 110 ms (p10017 = 0), the maximum discrepancy time which can be set is as follows: $p10002 \leq (110/2 \text{ ms}) - 12 \text{ ms} = 43 \text{ ms}$ Rounded-off, p10002 $\leq$ 36 ms is obtained (since the discrepancy time can only be accepted as a whole SI monitoring cycle, the value will need to be rounded up or down to a whole SI monitoring cycle if the result is not an exact multiple of an SI monitoring cycle). Note: F-DI: Failsafe Digital Input

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<b>A01788</b>	<b>Automatic test stop: wait for STO deselection via SMM</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The STO function is selected via Safety Extended Functions or a safety message is present, which results in STO. The automatic test stop was not able to be carried out since the power up. The automatic test stop is performed after deselecting STO.
<b>Remedy:</b>	Deselect STO via Safety Extended Functions. Remove the cause of the safety message and acknowledge the fault.

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<b>A01796 (F, N)</b>	<b>SI P1 (CU): Wait for communication</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The drive waits for communication to be established to execute the safety-relevant motion monitoring functions. Note: In this state, the pulses are safely suppressed. Alarm value (r2124, interpret decimal): 3: Wait for communication to be established to PROFIsafe F-Host.
<b>Remedy:</b>	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
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<b>C01798</b>	<b>SI Motion P1 (CU): Test stop running</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	The test stop is active.
<b>Remedy:</b>	Not necessary. The message is withdrawn when the test stop is finished.
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<b>C01799</b>	<b>SI Motion P1 (CU): Acceptance test mode active</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	The acceptance test mode is active.
<b>Remedy:</b>	Not necessary. The message is withdrawn when exiting the acceptance test mode.
<hr/>	
<b>A01900 (F)</b>	<b>PROFIBUS: Configuration telegram error</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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. 211: Unknown parameterizing block. 501: PROFIsafe parameter error (e.g. F_dest). 502: PROFIsafe telegram does not match. Additional values: Only for internal Siemens troubleshooting.
<b>Remedy:</b>	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 = 211: Ensure offline version <= online version. Re alarm value = 501: Check the set PROFIsafe address (p9610). Re alarm value = 502: Check the enable of F-DI (p9501.30).

<b>F01910 (N, A)</b>	<b>Fieldbus interface setpoint timeout</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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: p2040 (Fieldbus interface monitoring time), p2047 (PROFIBUS additional monitoring time)
<b>Remedy:</b>	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.
<b>A01920 (F)</b>	<b>PROFIBUS: Interruption cyclic connection</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The cyclic connection to the PROFIBUS master is interrupted.
<b>Remedy:</b>	Establish the PROFIBUS connection and activate the PROFIBUS master in the cyclic mode. Note: If there is no communication to a higher-level control system, then p2030 should be set = 0 to suppress this message. See also: p2030 (Field bus int protocol selection)
<b>A01945</b>	<b>PROFIBUS: Connection to the Publisher failed</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	Check the PROFIBUS cables. See also: r2077 (PROFIBUS diagnostics peer-to-peer data transfer addresses)
<b>F01946 (A)</b>	<b>PROFIBUS: Connection to the Publisher aborted</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	OFF1 (NONE, OFF2, OFF3)
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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.
<b>Remedy:</b>	- 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)

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<b>F01951</b>	<b>CU SYNC: Synchronization application clock cycle missing</b>
<b>Message class:</b>	Internal (DRIVE-CLiQ) communication error (12)
<b>Reaction:</b>	OFF2 (NONE)
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	Internal synchronization of the application cycles unsuccessful. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.
<b>Remedy:</b>	- carry out a POWER ON (power off/on) for all components. - upgrade the Control Unit software.

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<b>A01953</b>	<b>CU SYNC: Synchronization not completed</b>
<b>Message class:</b>	Internal (DRIVE-CLiQ) communication error (12)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	Carry out a POWER ON (power off/on).

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<b>A02050</b>	<b>Trace: Start not possible</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The trace has already been started.
<b>Remedy:</b>	Stop the trace and, if necessary, start again.

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<b>A02051</b>	<b>Trace: recording not possible as a result of know-how protection</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	TRACE recording is not possible as at least one signal or trigger signal being used is under know-how protection. Alarm value (r2124, interpret decimal): 1: Recorder 0 2: Recorder 1 3: Recorders 0 and 1
<b>Remedy:</b>	- Temporarily activate or deactivate know-how protection (p7766). - Include the signal in the OEM exception list (p7763, p7764). - Where relevant do not record of the signal. See also: p7763 (KHP OEM exception list number of indices for p7764), p7764 (KHP OEM exception list)

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<b>A02055</b>	<b>Trace: Recording time too short</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The trace duration is too short. The minimum is twice the value of the trace clock cycle.
<b>Remedy:</b>	Check the selected recording time and, if necessary, adjust.

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<b>A02056</b>	<b>Trace: Recording cycle too short</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The selected recording clock cycle is lower than the basic clock cycle 500µs.
<b>Remedy:</b>	Increase the value for the trace cycle.

## 4 Faults and alarms

### 4.2 List of faults and alarms

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<b>A02057</b>	<b>Trace: Time slice clock cycle invalid</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The time slice clock cycle selected does not match any of the existing time slices.
<b>Remedy:</b>	Enter an existing time slice clock cycle. The existing time slices can be read out via p7901. See also: r7901 (Sampling times)
<b>A02058</b>	<b>Trace: Time slice clock cycle for endless trace not valid</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The selected time slice clock cycle cannot be used for the endless trace
<b>Remedy:</b>	Enter the clock cycle of an existing time slice with a cycle time $\geq 2$ ms for up to 4 recording channels or $\geq 4$ ms from 5 recording channels per trace. The existing time slices can be read out via p7901. See also: r7901 (Sampling times)
<b>A02059</b>	<b>Trace: Time slice clock cycle for 2 x 8 recording channels not valid</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The selected time slice clock cycle cannot be used for more than 4 recording channels.
<b>Remedy:</b>	Enter the clock cycle of an existing time slice with a cycle time $\geq 4$ ms or reduce the number of recording channels to 4 per trace. The existing time slices can be read out via p7901. See also: r7901 (Sampling times)
<b>A02060</b>	<b>Trace: Signal to be traced missing</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	- a signal to be traced was not specified. - the specified signals are not valid.
<b>Remedy:</b>	- specify the signal to be traced. - check whether the relevant signal can be traced.
<b>A02061</b>	<b>Trace: Invalid signal</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	- the specified signal does not exist. - the specified signal can no longer be traced (recorded).
<b>Remedy:</b>	- specify the signal to be traced. - check whether the relevant signal can be traced.
<b>A02062</b>	<b>Trace: Invalid trigger signal</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	- a trigger signal was not specified. - the specified signal does not exist. - the specified signal is not a fixed-point signal. - the specified signal cannot be used as a trigger signal for the trace.
<b>Remedy:</b>	Specify a valid trigger signal.



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<b>A02063</b>	<b>Trace: Invalid data type</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The specified data type to select a signal using a physical address is invalid.
<b>Remedy:</b>	Use a valid data type.

---

<b>A02070</b>	<b>Trace: Parameter cannot be changed</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The trace parameter settings cannot be changed when the trace is active.
<b>Remedy:</b>	- stop the trace before parameterization. - if required, start the trace.

---

<b>A02075</b>	<b>Trace: Pretrigger time too long</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The selected pretrigger time must be shorter than the trace time.
<b>Remedy:</b>	Check the pretrigger time setting and change if necessary.

---

<b>F02080</b>	<b>Trace: Parameterization deleted due to unit changeover</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The trace parameterization in the drive unit was deleted due to a unit changeover or a change in the reference parameters.
<b>Remedy:</b>	Restart trace.

---

<b>A02095</b>	<b>MTrace 0: multiple trace cannot be activated</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The following functions or settings are not permissible in conjunction with a multiple trace (trace recorder 0): - measuring function - long-time trace - trigger condition "immediate recording start" (IMMEDIATE) - trigger condition "start with function generator" (FG_START)
<b>Remedy:</b>	- if required, deactivate the multiple trace (p4840[0] = 0). - deactivate function or setting that is not permissible

---

<b>A02096</b>	<b>MTrace 0: cannot be saved</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	It is not possible to save the measurement results of a multiple trace on the memory card (trace recorder 0). A multiple trace is not started or is canceled. Alarm value (r2124, interpret decimal): 1: Memory card cannot be accessed. - card is not inserted or is blocked by a mounted USB drive. 3: data save operation too slow. - a second trace has been completed before the measurement results of the first trace were able to be saved. - writing the measurement result files to the card is blocked by the parameter save.

## 4 Faults and alarms

### 4.2 List of faults and alarms

---

- 4: Data save operation canceled.
  - for instance, the file required for the data save operation was not able to be found.
- Remedy:**
- insert or remove the memory card.
  - use a larger memory card.
  - configure a longer trace time or use an endless trace.
  - avoid saving parameters while a multiple trace is running.
  - check whether other functions are presently accessing measurement result files.

---

#### A02097

#### **MTrace 1: multiple trace cannot be activated**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The following functions or settings are not permissible in conjunction with a multiple trace (trace recorder 1):

- measuring function
- long-time trace
- trigger condition "immediate recording start" (IMMEDIATE)
- trigger condition "start with function generator" (FG\_START)

**Remedy:**

- if required, deactivate the multiple trace (p4840[1] = 0).

- deactivate function or setting that is not permissible

---

#### A02098

#### **MTrace 1: cannot be saved**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** It is not possible to save the measurement results of a multiple trace on the memory card (trace recorder 1).

A multiple trace is not started or is canceled.

Alarm value (r2124, interpret decimal):

1: Memory card cannot be accessed.

- card is not inserted or is blocked by a mounted USB drive.

3: data save operation too slow.

- a second trace has been completed before the measurement results of the first trace were able to be saved.

- writing the measurement result files to the card is blocked by the parameter save.

4: Data save operation canceled.

- for instance, the file required for the data save operation was not able to be found.

**Remedy:**

- insert or remove the memory card.

- use a larger memory card.

- configure a longer trace time or use an endless trace.

- avoid saving parameters while a multiple trace is running.

- check whether other functions are presently accessing measurement result files.

---

#### A02099

#### **Trace: Insufficient Control Unit memory**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**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.

---

<b>A02150</b>	<b>OA: Application cannot be loaded</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The system was not able to load an OA application. Alarm value (r2124, interpret hexadecimal): 16: The interface version in the DCB user library is not compatible to the DCC standard library that has been loaded. Only for internal Siemens troubleshooting.
<b>Remedy:</b>	- carry out a POWER ON (power off/on) for all components. - upgrade firmware to later version. - contact the Hotline. Re alarm value = 16: Load a compatible DCB user library (compatible to the interface of the DCC standard library). Note: OA: Open Architecture

---

<b>F02151 (A)</b>	<b>OA: Internal software error</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2 (NONE, OFF1, OFF3)
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	An internal software error has occurred within an OA application. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting.
<b>Remedy:</b>	- 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

---

<b>F02152 (A)</b>	<b>OA: Insufficient memory</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF1
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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.
<b>Remedy:</b>	- 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

---

<b>F03000</b>	<b>NVRAM fault on action</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	A fault occurred during execution of action p7770 = 1 or 2 for the NVRAM data. Fault value (r0949, interpret hexadecimal): yyxx hex: yy = fault cause, xx = application ID yy = 1: The action p7770 = 1 is not supported by this version if Drive Control Chart (DCC) is activated for the drive object concerned.

## 4 Faults and alarms

### 4.2 List of faults and alarms

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**

**Message class:** Hardware / software error (1)

**Reaction:** NONE

**Acknowledge:** IMMEDIATELY

**Cause:** A checksum error occurred when evaluating the non-volatile data (NVRAM) on the Control Unit.  
The NVRAM data affected was deleted.

**Remedy:** Carry out a POWER ON (power off/on) for all components.

---

#### **F03505 (N, A) Analog input wire breakage**

**Message class:** External measured value / signal state outside the permissible range (16)

**Reaction:** OFF1 (NONE, OFF2)

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** The wire-break monitoring for an analog input has responded.  
The input current of the analog input has undershot the threshold value parameterized in p0761[0...3].

p0756[0]: analog input 0 (only CU240D-2)

p0756[1]: analog input 1 (only CU240D-2)

Fault value (r0949, interpret decimal):

yxxx dec

y = analog input (0 = analog input 0 (AI 0), 1 = analog input 1 (AI 1))

xxx = component number (p0151)

Note:

For the following analog input type, the wire breakage monitoring is active:

p0756[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) Calibration data not plausible**

**Message class:** Hardware / software error (1)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** During booting, the calibration data for the analog inputs is read and checked with respect to plausibility.  
At least one calibration data point was determined to be invalid.

**Remedy:** - power down/power up the power supply for the Control Unit.

Note:

If it reoccurs, then 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**

**Message class:** Power electronics faulted (5)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The alarm threshold for overtemperature at the inverter heat sink has been reached. The response is set using p0290.

If the temperature of the heat sink increases by an additional 5 K, then fault F30004 is initiated.

**Remedy:** Check the following:

- is the ambient temperature within the defined limit values?
- have the load conditions and the load duty cycle been appropriately dimensioned?
- has the cooling failed?

---

**A05001 (N) Power unit: Overtemperature depletion layer chip**

**Message class:** Power electronics faulted (5)  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** Alarm threshold for overtemperature of the power semiconductor in the AC converter has been reached.

Note:

- The response is set using p0290.
- If the depletion layer temperature increases by an additional 15 K, then fault F30025 is triggered.

**Remedy:** Check the following:

- is the ambient temperature within the defined limit values?
- have the load conditions and the load duty cycle been appropriately dimensioned?
- has the cooling failed?
- pulse frequency too high?

See also: r0037 (Power unit temperatures), p0290 (Power unit overload response)

---

**A05002 (N) Power unit: Air intake overtemperature**

**Message class:** Power electronics faulted (5)  
**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**

**Message class:** Power electronics faulted (5)  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The alarm threshold for the overtemperature of the rectifier has been reached. The response is set using p0290.  
 If the temperature of the rectifier increases by an additional 5 K, then fault F30037 is triggered.

**Remedy:** Check the following:

- is the ambient temperature within the defined limit values?
- have the load conditions and the load duty cycle been appropriately dimensioned?
- has the fan failed? Check the direction of rotation.
- has a phase of the line supply failed?
- is an arm of the supply (incoming) rectifier defective?

---

**A05006 (N) Power unit: Overtemperature thermal model**

**Message class:** Power electronics faulted (5)  
**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)

## 4 Faults and alarms

### 4.2 List of faults and alarms

**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)

---

#### **A05065 (F, N) Voltage measured values not plausible**

**Message class:** Power electronics faulted (5)  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The voltage measurement does not supply any plausible values and is not used.  
Alarm value (r2124, interpret bitwise binary):  
Bit 1: Phase U  
Bit 2: Phase V  
Bit 3: Phase W

**Remedy:** The following parameterization must be made in order to deactivate the alarm:  
- Deactivate voltage measurement (p0247.0 = 0).  
- Deactivate flying restart with voltage measurement (p0247.5 = 0) and deactivate fast flying restart (p1780.11 = 0).

---

#### **F06310 (A) Supply voltage (p0210) incorrectly parameterized**

**Message class:** Network fault (2)  
**Reaction:** NONE (OFF1, OFF2)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The measured DC voltage lies outside the tolerance range after pre-charging has been completed.  
Permissible 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**

**Message class:** Braking Module faulted (14)  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:**  
- the three resistors of the braking chopper are not symmetrical.  
- DC link voltage oscillations caused by fluctuating loads of the connected drives.  
**Remedy:**  
- check the feeder cables to the braking resistors.  
- If required, increase the value for detecting dissymmetry (p1364).

---

#### **F06922 Braking resistor phase failure**

**Message class:** Braking Module faulted (14)  
**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**

**Message class:** Motor overload (8)

**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 ( $R > 2120 \text{ Ohm}$ ).

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, p0615 reached).

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**

**Message class:** Motor overload (8)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The motor temperature model 1/3 identified that the alarm threshold was exceeded.

Hysteresis:2K.

Alarm value (r2124, interpret decimal):

200:

Motor temperature model 1 (I2t): Temperature too high (p0605).

300:

Motor temperature model 3: Temperature too high (p5398).

See also: r0034 (Motor utilization thermal), 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 activation of the motor temperature model (p0612).

Motor temperature model 1 (I2t):

- check the thermal time constant (p0611).
- check the alarm threshold (p0605).

Motor temperature model 3:

- check the motor type.
- check the alarm threshold (p5398).
- check the model parameters.

See also: r0034 (Motor utilization thermal), p0605 (Mot\_temp\_mod 1/2 threshold), p0611 (I2t motor model thermal time constant), p0612 (Mot\_temp\_mod activation), r5397 (Mot\_temp\_mod 3 ambient temperature image p0613)

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<b>A07014 (N)</b>	<b>Drive: Motor temperature model configuration alarm</b>
<b>Message class:</b>	Motor overload (8)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	A fault has occurred in the configuration of the motor temperature model. Alarm value (r2124, interpret decimal): 1: All motor temperature models: It is not possible to save the model temperature See also: p0610 (Motor overtemperature response)
<b>Remedy:</b>	- set the response for motor overtemperature to "Alarm and fault, no reduction of I_max" (p0610 = 2). See also: p0610 (Motor overtemperature response)
<hr/>	
<b>A07015</b>	<b>Drive: Motor temperature sensor alarm</b>
<b>Message class:</b>	External measured value / signal state outside the permissible range (16)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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).
<b>Remedy:</b>	- 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)
<hr/>	
<b>F07016</b>	<b>Drive: Motor temperature sensor fault</b>
<b>Message class:</b>	External measured value / signal state outside the permissible range (16)
<b>Reaction:</b>	OFF1 (NONE, OFF2, OFF3, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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)
<b>Remedy:</b>	- 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)
<hr/>	
<b>F07080</b>	<b>Drive: Incorrect control parameter</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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

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### F07082

#### Macro: Execution not possible

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Reaction:** NONE

**Acknowledge:** IMMEDIATELY

**Cause:** The macro cannot be executed.

Fault value (r0949, interpret hexadecimal):

ccccbbaa 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

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**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.

<b>F07084</b>	<b>Macro: Condition for WaitUntil not fulfilled</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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.
<b>Remedy:</b>	Check and correct the conditions for the WaitUntil loop.
<b>F07086</b>	<b>Units changeover: Parameter limit violation due to reference value change</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	A reference parameter was changed in the system. This resulted in the fact that for the parameters involved, the selected value was not able to be written in the per unit notation. The values of the parameters were set to the corresponding violated minimum limit/maximum limit or to the factory setting. Possible causes: - the steady-state minimum limit/maximum limit or that defined in the application was violated. Fault value (r0949, parameter): Diagnostics parameter to display the parameters that were not able to be re-calculated. See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004
<b>Remedy:</b>	Check the adapted parameter value and if required correct.
<b>F07088</b>	<b>Units changeover: Parameter limit violation due to units changeover</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	A changeover of units was initiated. This resulted in a violation of a parameter limit Possible causes for the violation of a parameter limit: - When rounding off a parameter corresponding to its decimal places, the steady-state minimum limit or maximum limit was violated. - inaccuracies for the data type "FloatingPoint". In these cases, when the minimum limit is violated then the parameter value is rounded up and when the maximum limited is violated the parameter value is rounded down. Fault value (r0949, interpret decimal): Diagnostics parameter r9451 to display all parameters whose value had to be adapted. See also: p0100 (IEC/NEMA mot stds), p0505 (Selecting the system of units), p0595 (Technological unit selection)
<b>Remedy:</b>	Check the adapted parameter values and if required correct. See also: r9451 (Units changeover adapted parameters)
<b>A07089</b>	<b>Changing over units: Function module activation is blocked because the units have been changed over</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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)
<b>Remedy:</b>	Restore units that have been changed over to the factory setting.

---

<b>A07092</b>	<b>Drive: moment of inertia estimator still not ready</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The moment of inertia estimator still has no valid values. The acceleration cannot be calculated. The moment of inertia estimator is ready, if the frictional values (p1563, p1564) as well as the moment of inertia value (p1493) have been determined (r1407.26 = 1).
<b>Remedy:</b>	Repeat the operation when the moment of inertia estimator is ready (r1407.26 = 1).

---

<b>A07200</b>	<b>Drive: Master control ON command present</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	Switch the signal via binector input p0840 (current CDS) or control word bit 0 via the master control to 0.

---

<b>F07220 (N, A)</b>	<b>Drive: Master control by PLC missing</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	OFF1 (NONE, OFF2, OFF3, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The "master control by PLC" signal was missing in operation. - interconnection of the binector input for "master control by PLC" is incorrect (p0854). - the higher-level control has withdrawn the "master control by PLC" signal. - data transfer via the fieldbus (master/drive) was interrupted.
<b>Remedy:</b>	- check the interconnection of the binector input for "master control by PLC" (p0854). - check the "master control by PLC" signal and, if required, switch in. - check the data transfer via the fieldbus (master/drive). Note: If the drive should continue to operate after withdrawing "master control by PLC" then fault response must be parameterized to NONE or the message type should be parameterized as alarm.

---

<b>F07300 (A)</b>	<b>Drive: Line contactor feedback signal missing</b>
<b>Message class:</b>	Auxiliary unit faulted (20)
<b>Reaction:</b>	OFF2 (NONE)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	- the line contactor was not able to be closed within the time in p0861. - the line contactor was not able to be opened within the time in p0861. - the line contactor dropped out during operation - the line contactor has closed although the drive converter is powered down.
<b>Remedy:</b>	- check the setting of p0860. - check the feedback circuit from the line contactor. - increase the monitoring time in p0861. See also: p0860 (Line contactor feedback signal), p0861 (Line contactor monitoring time)

---

<b>F07320</b>	<b>Drive: Automatic restart interrupted</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	- 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).

## 4 Faults and alarms

### 4.2 List of faults and alarms

- when exiting commissioning or at the end of the motor identification routine or the speed controller optimization, the drive unit is not automatically powered up again.

Fault value (r0949, interpret hexadecimal):

Only for internal Siemens troubleshooting.

**Remedy:**

- increase the number of restart attempts (p1211). The actual number of starting attempts is displayed in r1214.
- increase the delay time in p1212 and/or the monitoring time in p1213.
- issue an ON command (p0840).
- either increase or disable the monitoring time of the power unit (p0857).
- Reduce the delay time for resetting the start counter (p1213[1]) so that fewer faults are registered in the time interval.

---

#### **A07321 Drive: Automatic restart active**

**Message class:** Application / technological function faulted (17)

**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, 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**

**Message class:** Application / technological function faulted (17)

**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**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**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**

**Message class:** Application / technological function faulted (17)

**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.

See also: r0056 (Status word, closed-loop control), p1240 (Vdc controller configuration (vector control)), p1280 (Vdc controller configuration (U/f))

**Remedy:** If the controller is not to intervene:

- increase the ramp-down times.
- switch-off the Vdc\_max controller (p1240 = 0 for vector control, p1280 = 0 for U/f control).

If the ramp-down times are not to be changed:

- use a chopper or regenerative feedback unit.

<b>A07401 (N)</b>	<b>Drive: DC link voltage maximum controller de-activated</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	- check whether the input voltage is within the permissible range (if required, increase the value in p0210). - check whether the load duty cycle and load limits are within the permissible limits.
<b>A07402 (N)</b>	<b>Drive: DC link voltage minimum controller active</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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))
<b>Remedy:</b>	The alarm disappears when power supply returns.
<b>F07404</b>	<b>Drive: DC link voltage monitoring Vdc_max</b>
<b>Message class:</b>	DC link overvoltage (4)
<b>Reaction:</b>	OFF2 (NONE, OFF1, OFF3)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The monitoring of the DC link voltage p1284 has responded (only U/f control).
<b>Remedy:</b>	- check the line supply voltage. - check the braking module. - adapt the device supply voltage (p0210). - adapt the DC link voltage monitoring (p1284).
<b>F07405 (N, A)</b>	<b>Drive: Kinetic buffering minimum speed not reached</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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.
<b>Remedy:</b>	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))
<b>F07406 (N, A)</b>	<b>Drive: Kinetic buffering maximum time exceeded</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The maximum buffer time (p1255 and p1295 for vector drives with U/f control) has been exceeded without the line supply having returned.
<b>Remedy:</b>	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))
<b>A07409</b>	<b>Drive: U/f control, current limiting controller active</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The current limiting controller of the U/f control was activated because the current limit was exceeded.

## 4 Faults and alarms

### 4.2 List of faults and alarms

**Remedy:** The alarm automatically disappears after one of the following measures:

- increase current limit (p0640).
- reduce the load.
- slow down the ramp up to the setpoint speed.

---

**F07410 Drive: Current controller output limited**

**Message class:** Application / technological function faulted (17)

**Reaction:** OFF2 (NONE, OFF1)

**Acknowledge:** IMMEDIATELY

**Cause:** The condition " $I_{act} = 0$  and  $U_q_{set\_1}$  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 setpoint not reached when building up excitation**

**Message class:** Application / technological function faulted (17)

**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.
- the current limit has been set too low for the motor.
- induction motor (encoderless, open-loop controlled) in I<sub>2t</sub> 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.

---

**A07416 Drive: Flux controller configuration**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The configuration of the flux control (p1401) is contradictory.

Alarm value (r2124, interpret hexadecimal):

ccbbaaaa hex  
aaaa = Parameter  
bb = Index  
cc = fault cause

- 1: Quick magnetizing (p1401.6) for soft starting (p1401.0).
- 2: Quick magnetizing for flux build-up control (p1401.2).
- 3: Quick magnetizing (p1401.6) for R<sub>s</sub> identification after restart (p0621 = 2).

**Remedy:**

- Re fault cause = 1:
  - Shut down soft start (p1401.0 = 0).
  - Shut down quick magnetizing (p1401.6 = 0).
- Re fault cause = 2:
  - De-energize flux build-up control (p1401.2 = 0).
  - Shut down quick magnetizing (p1401.6 = 0).
- Re fault cause = 3:
  - Re-parameterize Rs identification (p0621 = 0, 1)
  - Shut down quick magnetizing (p1401.6 = 0).

---

**F07426 (A) Technology controller actual value limited**

**Message class:** Application / technological function faulted (17)  
**Reaction:** OFF1 (IASC/DCBRK, 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)

---

**A07428 (N) Technology controller parameterizing error**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The technology controller has a parameterizing error.  
Alarm value (r2124, interpret decimal):  
1:  
The upper output limit in p2291 is set lower than the lower output limit in p2292.

**Remedy:**

Re alarm value = 1:  
Set the output limit in p2291 higher than in p2292.  
See also: p2291 (Technology controller maximum limiting), p2292 (Technology controller minimum limiting)

---

**F07435 (N) Drive: Setting the ramp-function generator for sensorless vector control**

**Message class:** Application / technological function faulted (17)  
**Reaction:** OFF2 (IASC/DCBRK, 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.

**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).

---

**A07530 Drive: Drive Data Set DDS not present**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**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.

## 4 Faults and alarms

### 4.2 List of faults and alarms

---

<b>A07531</b>	<b>Drive: Command Data Set CDS not present</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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)
<b>Remedy:</b>	- select the existing command data set. - set up additional command data sets.

---

<b>F07563 (A)</b>	<b>Drive encoder: XIST1_ERW configuration incorrect</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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): yyxx dec: yy = fault cause, xx = encoder data set
<b>Remedy:</b>	For fault value = 1: - upgrade the Sensor Module firmware version. - check the mode (p4652 = 1, 3 requires the property r0459.13 = 1).

---

<b>F07754</b>	<b>Drive: Incorrect shutoff valve configuration</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	An incorrect shutoff valve configuration was detected. Fault value (r0949, interpret decimal): 100: Enable Safety Integrated (p9601/p9801), but p0218.0 = 0 (shutoff valve not available). 101: The manipulated variable inhibit time is set less than the wait time to evaluate the feedback signal contacts when switching on the shutoff valve (p0230 < p9625[0]/p9825[0]). 102: The manipulated variable inhibit time is set less than the wait time to evaluate the feedback signal contacts when switching off the shutoff valve (p0230 < p9625[1]/p9825[1]).
<b>Remedy:</b>	For fault value = 100: Check the enable of Safety Integrated and the shutoff valve (p9601/p9801, p0218.0). For fault value = 101: Set the manipulated variable inhibit time higher than the wait time to evaluate the feedback signal contacts when switching on the shutoff valve (p0230 > p9625[0]/p9825[0]). For fault value = 102: Set the manipulated variable inhibit time higher than the wait time to evaluate the feedback signal contacts when switching off the shutoff valve (p0230 > p9625[1]/p9825[1]). See also: p0230 (Drive filter type motor side)

---

<b>F07800</b>	<b>Drive: No power unit present</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The power unit parameters cannot be read or no parameters are stored in the power unit.



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 power unit and replace if necessary.
  - check the Control Unit, and if required replace it.
  - after correcting the topology, the parameters must be again downloaded using the commissioning software.

---

**F07801 Drive: Motor overcurrent**

**Message class:** Motor overload (8)

**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**

**Message class:** Infeed faulted (13)

**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**

**Message class:** Power electronics faulted (5)

**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.

## 4 Faults and alarms

### 4.2 List of faults and alarms

---

<b>F07806</b>	<b>Drive: Regenerative power limit exceeded (F3E)</b>
<b>Message class:</b>	Power electronics faulted (5)
<b>Reaction:</b>	OFF2 (IASC/DCBRK)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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)
<b>Remedy:</b>	- 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.

---

<b>F07807</b>	<b>Drive: Short-circuit/ground fault detected</b>
<b>Message class:</b>	Ground fault / inter-phase short-circuit detected (7)
<b>Reaction:</b>	OFF2 (NONE)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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.
<b>Remedy:</b>	- check the motor-side converter connection for a phase-phase short-circuit. - rule-out interchanged line and motor cables. - check for a ground fault. For a ground fault: - do not enable the pulses when connecting to a rotating motor without the "Flying restart" function activated (p1200). - increase the de-energization time (p0347). - If required, deactivate the monitoring (p1901).

---

<b>F07810</b>	<b>Drive: Power unit EEPROM without rated data</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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)
<b>Remedy:</b>	Replace the power unit or inform Siemens Customer Service.

---

<b>A07850 (F)</b>	<b>External alarm 1</b>
<b>Message class:</b>	External measured value / signal state outside the permissible range (16)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The condition for "External alarm 1" is satisfied. Note: The "External alarm 1" is initiated by a 1/0 edge via binector input p2112. See also: p2112 (External alarm 1)
<b>Remedy:</b>	Eliminate the causes of this alarm.

---

<b>A07851 (F)</b>	<b>External alarm 2</b>
<b>Message class:</b>	External measured value / signal state outside the permissible range (16)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The condition for "External alarm 2" is satisfied. Note: The "External alarm 2" is initiated by a 1/0 edge via binector input p2116. See also: p2116 (External alarm 2)
<b>Remedy:</b>	Eliminate the causes of this alarm.

---

<b>A07852 (F)</b>	<b>External alarm 3</b>
<b>Message class:</b>	External measured value / signal state outside the permissible range (16)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The condition for "External alarm 3" is satisfied. Note: The "External alarm 3" is initiated by a 1/0 edge via binector input p2117. See also: p2117 (External alarm 3)
<b>Remedy:</b>	Eliminate the causes of this alarm.

---

<b>F07860 (A)</b>	<b>External fault 1</b>
<b>Message class:</b>	External measured value / signal state outside the permissible range (16)
<b>Reaction:</b>	OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	The condition for "External fault 1" is satisfied. Note: The "External fault 1" is initiated by a 1/0 edge via binector input p2106. See also: p2106 (External fault 1)
<b>Remedy:</b>	- eliminate the causes of this fault. - acknowledge fault.

---

<b>F07861 (A)</b>	<b>External fault 2</b>
<b>Message class:</b>	External measured value / signal state outside the permissible range (16)
<b>Reaction:</b>	OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	The condition for "External fault 2" is satisfied. Note: The "External fault 2" is initiated by a 1/0 edge via binector input p2107. See also: p2107 (External fault 2)
<b>Remedy:</b>	- eliminate the causes of this fault. - acknowledge fault.

---

<b>F07862 (A)</b>	<b>External fault 3</b>
<b>Message class:</b>	External measured value / signal state outside the permissible range (16)
<b>Reaction:</b>	OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	The condition for "External fault 3" is satisfied. Note: The "External fault 3" is initiated by a 1/0 edge via the following parameters. - AND logic operation, binector input p2108, p3111, p3112. - switch-on delay p3110. See also: p2108 (External fault 3), p3110 (External fault 3 power-up delay), p3111 (External fault 3 enable), p3112 (External fault 3 enable negated)
<b>Remedy:</b>	- eliminate the causes of this fault. - acknowledge fault.

## 4 Faults and alarms

### 4.2 List of faults and alarms

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<b>F07900 (N, A)</b>	<b>Drive: Motor blocked</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	OFF2 (NONE, OFF1, OFF3, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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)
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- check that the motor can freely move.</li><li>- check the effective torque limit (r1538, r1539).</li><li>- check the parameter, message "Motor blocked" and if required, correct (p2175, p2177).</li><li>- check the direction of rotation enable signals for a flying restart of the motor (p1110, p1111).</li><li>- for U/f control: check the current limits and acceleration times (p0640, p1120).</li></ul>
<hr/>	
<b>F07901</b>	<b>Drive: Motor overspeed</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	OFF2 (IASC/DCBRK)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The maximum permissible speed was either positively or negatively exceeded. The maximum permissible positive speed is formed as follows: Minimum (p1082, Cl: p1085) + p2162 The maximum permissible negative speed is formed as follows: Maximum (-p1082, Cl: 1088) - p2162
<b>Remedy:</b>	The following applies for a positive direction of rotation: <ul style="list-style-type: none"><li>- check r1084 and if required, correct p1082, Cl:p1085 and p2162.</li></ul> The following applies for a negative direction of rotation: <ul style="list-style-type: none"><li>- check r1087 and if required, correct p1082, Cl:p1088 and p2162.</li></ul> 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.
<hr/>	
<b>F07902 (N, A)</b>	<b>Drive: Motor stalled</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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) or via (r0084 ... r0083). See also: p2178 (Motor stalled delay time)
<b>Remedy:</b>	Steps should always be taken to ensure that both motor data identification and the rotating measurement were carried out (see p1900, r3925). <ul style="list-style-type: none"><li>- 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.</li><li>- 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.</li><li>- check whether a line phase failure is affecting power unit PM230, PM250, PM260.</li><li>- check whether the motor cables are disconnected (see A07929).</li></ul> If there is no fault, then the fault tolerance (p1745) or the delay time (p2178) can be increased. <ul style="list-style-type: none"><li>- check the current limits (p0640, r0067, r0289). If the current limits are too low, then the drive cannot be magnetized.</li><li>- If the fault occurs with fault value 2 when the motor accelerates very quickly to the field weakening range, the deviation between the flux setpoint and flux actual value can be reduced and, in turn, the message prevented, by reducing p1596 or p1553.</li></ul>

---

<b>A07903</b>	<b>Drive: Motor speed deviation</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The absolute value of the speed difference from the setpoint (p2151) and the speed actual value (r2169) exceeds the tolerance threshold (p2163) longer than tolerated (p2164, p2166). The alarm is only enabled for p2149.0 = 1. Possible causes: <ul style="list-style-type: none"><li>- the load torque is greater than the torque setpoint.</li><li>- when accelerating, the torque/current/power limit is reached. If the limits are not sufficient, then it is possible that the drive has been dimensioned too small.</li><li>- for closed-loop torque control, the speed setpoint does not track the speed actual value.</li><li>- for active Vdc controller.</li></ul> For U/f control, the overload condition is detected as the I_max controller is active. See also: p2149 (Monitoring configuration)
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- increase p2163 and/or p2166.</li><li>- increase the torque/current/power limits.</li><li>- for closed-loop torque control: The speed setpoint should track the speed actual value.</li><li>- de-activate alarm with p2149.0 = 0.</li></ul>

---

<b>A07910 (N)</b>	<b>Drive: Motor overtemperature</b>
<b>Message class:</b>	Motor overload (8)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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 2/KTY alarm threshold), p0610 (Motor overtemperature response)
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- check the motor load.</li><li>- check the motor ambient temperature.</li><li>- check KTY84.</li><li>- check overtemperatures of the motor temperature model 2 (p0626 ... p0628).</li></ul> See also: p0612 (Mot_temp_mod activation), p0625 (Motor ambient temperature during commissioning), p0626 (Motor overtemperature, stator core), p0627 (Motor overtemperature, stator winding), p0628 (Motor overtemperature rotor winding)

---

<b>A07920</b>	<b>Drive: Torque/speed too low</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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)
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- check the connection between the motor and load.</li><li>- adapt the parameterization corresponding to the load.</li></ul>

## 4 Faults and alarms

### 4.2 List of faults and alarms

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**A07921**      **Drive: Torque/speed too high**  
**Message class:** Application / technological function faulted (17)  
**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**  
**Message class:** Application / technological function faulted (17)  
**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**  
**Message class:** Application / technological function faulted (17)  
**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**  
**Message class:** Application / technological function faulted (17)  
**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**  
**Message class:** Application / technological function faulted (17)  
**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.

---

<b>A07927</b>	<b>DC braking active</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	Not necessary. The alarm automatically disappears once DC braking has been executed.

---

<b>A07929 (F)</b>	<b>Drive: No motor detected</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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)
<b>Remedy:</b>	- 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).

---

<b>F07936</b>	<b>Drive: load failure</b>
<b>Message class:</b>	Application / technological function faulted (17)
<b>Reaction:</b>	OFF1 (NONE, OFF2, OFF3)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The load monitoring has detected a load failure.
<b>Remedy:</b>	- check the sensor. - if necessary, de-activate the load monitoring (p2193). See also: p2193 (Load monitoring configuration), p3232 (Load monitoring failure detection)

---

<b>F07950 (A)</b>	<b>Motor parameter incorrect</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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
<b>Remedy:</b>	Compare the motor data with the rating plate data and if required, correct.

---

<b>F07967</b>	<b>Drive: Incorrect pole position identification</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2 (NONE, OFF1)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	A fault has occurred during the pole position identification routine. Only for internal Siemens troubleshooting.
<b>Remedy:</b>	Carry out a POWER ON.

---

**F07968 Drive: Lq-Ld measurement incorrect**

<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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.
<b>Remedy:</b>	For fault value = 10: Check whether the motor is correctly connected. Replace the power unit involved. De-activate technique (p1909). For fault value = 12: Check whether motor data have been correctly entered. De-activate technique (p1909). For fault value = 16: De-activate technique (p1909). For fault value = 17: Repeat technique.

---

**F07969 Drive: Incorrect pole position identification**

<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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 "flying restart" function.
<b>Remedy:</b>	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 (if required, first set p0323).  
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).

---

<b>A07976</b>	<b>Drive: Fine encoder calibration activated</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The alarm indicates the phases of the fine encoder calibration using the 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.
<b>Remedy:</b>	Re alarm value = 10: Increase the speed. Re alarm value = 12: Bring the drive into a no-load condition.

---

<b>A07980</b>	<b>Drive: Rotating measurement activated</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The rotating measurement (automatic speed controller optimization) is activated. The rotating measurement is carried out at the next power-on command. Note: During the rotating measurement it is not possible to save the parameters (p0971). See also: p1960 (Rotating measurement selection)

## 4 Faults and alarms

### 4.2 List of faults and alarms

**Remedy:** Not necessary.  
The alarm disappears automatically after the speed controller optimization has been successfully completed or for the setting p1900 = 0.

---

#### **A07981 Drive: Enable signals for the rotating measurement missing**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The rotating measurement cannot be started due to missing enable signals.

For p1959.13 = 1, the following applies:

- enable signals for the ramp-function generator missing (see p1140 ... p1142).
- enable signals for the speed controller integrator missing (see p1476, p1477).

**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**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**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.

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)

---

<b>F07984</b>	<b>Drive: Speed controller optimization, moment of inertia</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF1 (NONE, OFF2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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.
<b>Remedy:</b>	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)

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<b>F07985</b>	<b>Drive: Speed controller optimization (oscillation test)</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF1 (NONE, OFF2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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.

## 4 Faults and alarms

### 4.2 List of faults and alarms

- 5: Torque limits too low for a torque step.
- 6: No suitable speed controller setting was found.

**Remedy:**

For fault value = 1:

- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- carry out a motor data identification routine (p1910).
- if required, reduce the dynamic factor (p1967 < 25 %).

For fault value = 2:

- adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).

For fault value = 3:

- adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).

For fault value = 4:

- adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).

For fault value = 5:

- increase the torque limits (e.g. p1520, p1521).

For fault value = 6:

- reduce the dynamic factor (p1967).
- disable the vibration test (p1959.4 = 0) and repeat the rotating measurement.

See also: p1959 (Rotating measurement configuration)

---

**F07986****Drive: Rotating measurement ramp-function generator**

**Message class:**

Error in the parameterization / configuration / commissioning procedure (18)

**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**

**Message class:**

Error in the parameterization / configuration / commissioning procedure (18)

**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**

**Message class:**

Error in the parameterization / configuration / commissioning procedure (18)

**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.

- 12: Ground fault detected.
- 15: Pulse inhibit occurred during motor data identification
- 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.

Note:

Percentage values are referred to the rated motor impedance:

$$Z_n = V_{\text{mot,nom}} / \sqrt{3} / I_{\text{mot,nom}}$$

**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).

Re fault value = 4, 7:

- check whether the inductance in p0233 is correctly set.
- check whether motor has been correctly connected (star-delta).

Re fault value = 11 in addition:

- Deactivate oscillation monitoring (p1909.7 = 1).

For fault value = 12:

- check the power cable connections.
- check the motor.
- check the CT.

**A07991 (N)**

**Drive: Motor data identification activated**

**Message class:**

Error in the parameterization / configuration / commissioning procedure (18)

**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**

**Message class:**

Error in the parameterization / configuration / commissioning procedure (18)

**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).

and

- motor data identification has still not been performed in the actual drive data set (see r3925).

Note:

For SINAMICS G120, a check is made and an alarm is output also when exiting commissioning and when the system powers up.

**Remedy:**

- 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.

## 4 Faults and alarms

### 4.2 List of faults and alarms

---

<b>F08010 (N, A)</b>	<b>CU: Analog-to-digital converter</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	The analog-to-digital converter on the Control Unit has not supplied any converted data.
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- check the power supply.</li><li>- replace Control Unit.</li></ul>

---

<b>F08501 (N, A)</b>	<b>PROFINET: Setpoint timeout</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The reception of setpoints from PROFINET has been interrupted. <ul style="list-style-type: none"><li>- bus connection interrupted.</li><li>- controller switched off.</li><li>- controller set into the STOP state.</li></ul>
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- Restore the bus connection and set the controller to RUN.</li><li>- check the set monitoring time if the error persists (p2040).</li></ul>

---

<b>F08502 (A)</b>	<b>PROFINET: Monitoring time sign-of-life expired</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	OFF1 (OFF2, OFF3)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The monitoring time for the sign-of-life counter has expired. The connection to the PROFINET interface was interrupted.
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- carry out a POWER ON (power off/on).</li><li>- contact the Hotline.</li></ul>

---

<b>A08511 (F)</b>	<b>PROFINET: Receive configuration data invalid</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	Check the receive configuration data. Re alarm value = 2: <ul style="list-style-type: none"><li>- Check the number of data words for output and input to a drive object.</li></ul> Re alarm value = 501: <ul style="list-style-type: none"><li>- Check the set PROFIsafe address (p9610).</li></ul> Re alarm value = 502: Check the enable of F-DI (p9501.30).

---

<b>A08526 (F)</b>	<b>PROFINET: No cyclic connection</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	There is no connection to a PROFINET controller.
<b>Remedy:</b>	Establish the cyclic connection and activate the controller with cyclic operation. Check the parameters "Name of Station" and "IP of Station" (r61000, r61001).

---

<b>A08565</b>	<b>PROFINET: Consistency error affecting adjustable parameters</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	<p>A consistency error was detected when activating the configuration (p8925) for the PROFINET interface. The currently set configuration has not been activated.</p> <p>Alarm value (r2124, interpret decimal):</p> <ul style="list-style-type: none"><li>0: general consistency error</li><li>1: error in the IP configuration (IP address, subnet mask or standard gateway)</li><li>2: Error in the station names.</li><li>3: DHCP was not able to be activated, as a cyclic PROFINET connection already exists.</li><li>4: a cyclic PROFINET connection is not possible as DHCP is activated.</li></ul> <p>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)</p>
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- Check the required interface configuration (p8920 and following), correct if necessary, and activate (p8925).</li><li>or</li><li>- Reconfigure the station via the "Edit Ethernet node" screen form (e.g. with STARTER commissioning software).</li></ul> <p>See also: p8925 (PN interface configuration)</p>

---

<b>F08700 (A)</b>	<b>CAN: Communications error</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	OFF3 (NONE, OFF1, OFF2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	<p>A CAN communications error has occurred.</p> <p>Fault value (r0949, interpret decimal):</p> <ul style="list-style-type: none"><li>1: The error counter for the send telegrams has exceeded the BUS OFF value 255. The bus disables the CAN controller.<ul style="list-style-type: none"><li>- bus cable short circuit.</li><li>- incorrect baud rate.</li><li>- incorrect bit timing.</li></ul></li><li>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]).<ul style="list-style-type: none"><li>- bus cable interrupted.</li><li>- bus cable not connected.</li><li>- incorrect baud rate.</li><li>- incorrect bit timing.</li><li>- master fault.</li></ul></li></ul> <p>Note:</p> <p>The fault response can be set as required using p8641.</p>
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- check the bus cable</li><li>- check the baud rate (p8622).</li><li>- check the bit timing (p8623).</li><li>- check the master.</li></ul> <p>The CAN controller must be manually restarted with p8608 = 1 after the cause of the fault has been resolved!</p>

---

<b>F08701</b>	<b>CAN: NMT state change</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	OFF3
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	<p>A CANopen NMT state transition from "operational" to "pre-operational" or after "stopped".</p> <p>Fault value (r0949, interpret decimal):</p> <ul style="list-style-type: none"><li>1: CANopen NMT state transition from "operational" to "pre-operational".</li><li>2: CANopen NMT state transition from "operational" to "stopped".</li></ul> <p>Note:</p> <p>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.</p>

## 4 Faults and alarms

### 4.2 List of faults and alarms

**Remedy:** Not necessary.  
Acknowledge the fault and continue operation.

---

**F08702 (A) CAN: RPDO Timeout**  
**Message class:** Communication error to the higher-level control system (9)  
**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 (N) CAN: Telegram loss**  
**Message class:** Communication error to the higher-level control system (9)  
**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**  
**Message class:** Communication error to the higher-level control system (9)  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The error counter for the send or receive telegrams has exceeded the value 127.  
**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**  
**Message class:** Communication error to the higher-level control system (9)  
**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).  
Re alarm value = 2:  
- 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**  
**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**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.



---

<b>A08755</b>	<b>CAN: Obj cannot be mapped</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The CANopen object is not provided for the Process Data Object (PDO) Mapping.
<b>Remedy:</b>	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, 60FF 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.

---

<b>A08756</b>	<b>CAN: Number of mapped bytes exceeded</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The number of bytes of the mapped objects exceeds the telegram size for net data. A max. of 8 bytes is permissible.
<b>Remedy:</b>	Map fewer objects or objects with a smaller data type.

---

<b>A08757</b>	<b>CAN: Set COB-ID invalid</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	For online operation, the appropriate COB-ID must be set invalid before mapping. Example: Mapping for RPDO 1 should be changed (p8710[0]). --> set p8700[0] = C00006E0 hex (invalid COB-ID) --> set p8710[0] as required. --> p8700[0] enter a valid COB-ID
<b>Remedy:</b>	Set the COB-ID to invalid.

---

<b>A08759</b>	<b>CAN: PDO COB-ID already available</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	An existing PDO COB-ID was allocated.
<b>Remedy:</b>	Select another PDO COB-ID.

---

<b>A08760</b>	<b>CAN: maximum size of the IF PZD exceeded</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The maximum size of the IF PZD was exceeded. Alarm value (r2124, interpret decimal): 1: error for IF PZD receive. 2: error for IF PZD send. Note: IF: interface
<b>Remedy:</b>	Map fewer process data in PDO. Apply one of the following options to delete the alarm: - POWER ON (off/on). - carry out a warm restart (p0009 = 30, p0976 = 2).

## 4 Faults and alarms

### 4.2 List of faults and alarms

- execute CANopen NMT command reset node.
- change CANopen NMT state.
- delete alarm buffer [0...7] (p2111 = 0).

---

<b>A08800</b>	<b>PROFenergy energy-saving mode active</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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)
<b>Remedy:</b>	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.

---

<b>A08802</b>	<b>PROFenergy not possible to switch off incremental encoder supply</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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
<b>Remedy:</b>	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.

---

<b>F13009</b>	<b>Licensing OA application not licensed</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF1
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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.
<b>Remedy:</b>	- enter and activate the license key for OA applications under license (p9920, p9921). - if necessary, de-activate unlicensed OA applications (p4956).

---

<b>F13100</b>	<b>Know-how protection: Copy protection error</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF1
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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 configuration)
<b>Remedy:</b>	Re fault value = 0, 1: - Insert the correct memory card and carry out POWER ON.

Re fault value = 2, 3, 12, 13:

- contact the responsible OEM.
- Deactivate copy protection (p7765) and acknowledge the fault (p3981).
- Deactivate know-how protection (p7766 ... p7768) and acknowledge the fault (p3981).

Note:

In general, the copy protection can only be changed when know-how protection is deactivated.

KHP: Know-How Protection

See also: p3981 (Faults acknowledge drive object), p7765 (KHP configuration)

---

### F13101

#### Know-how protection: Copy protection cannot be activated

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**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 configuration)

---

### F13102

#### Know-how protection: Consistency error of the protected data

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Reaction:** OFF1  
**Acknowledge:** IMMEDIATELY  
**Cause:** An error was identified when checking the consistency of the protected files. As a consequence, the project on the memory card cannot be run.  
 Fault value (r0949, interpret hexadecimal):  
 yyyyxxxx hex: yyyy = object number, xxxx = fault cause  
 xxxx = 1:  
 A file has a checksum error.  
 xxxx = 2:  
 The files are not consistent with one another.  
 xxxx = 3:  
 The project files, which were loaded into the file system via load (download from the memory card), are inconsistent.  
 Note:  
 KHP: Know-How Protection  
**Remedy:** - Replace the project on the memory card or replace project files for download from the memory card.  
 - Restore the factory setting and download again.

---

### F30001

#### Power unit: Overcurrent

**Message class:** Power electronics faulted (5)  
**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: Up ramp set too low.  
 - 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.

## 4 Faults and alarms

### 4.2 List of faults and alarms

- 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:

- Remedy:**
- Fault value = 0 means that the phase with overcurrent is not recognized.
  - 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**

**Message class:** DC link overvoltage (4)

**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**

**Message class:** Infeed faulted (13)

**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**

**Message class:** Power electronics faulted (5)  
**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**

**Message class:** Power electronics faulted (5)  
**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**

**Message class:** Network fault (2)  
**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 capacitance of the DC link capacitor forms a resonance frequency with the line inductance and the reactor integrated in the power unit.
- 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.

## 4 Faults and alarms

### 4.2 List of faults and alarms

- Remedy:**
- check the main circuit fuses.
  - Check whether a single-phase load is distorting the line voltages.
  - Detune the resonant frequency with the line inductance by using an upstream line reactor.
  - Dampen the resonant frequency with the line inductance by switching over the DC link voltage compensation in the software (see p1810) – or increase the smoothing (see p1806). However, this can have a negative impact on the torque ripple at the motor output.
  - check the motor feeder cables.

---

#### **F30012 Power unit: Temperature sensor heat sink wire breakage**

- Message class:** Power electronics faulted (5)  
**Reaction:** OFF1 (OFF2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** The connection to a heat sink temperature sensor in the power unit is interrupted.  
Fault value (r0949, interpret hexadecimal):  
Bit 0: Module slot (electronics slot)  
Bit 1: Air intake  
Bit 2: Inverter 1  
Bit 3: Inverter 2  
Bit 4: Inverter 3  
Bit 5: Inverter 4  
Bit 6: Inverter 5  
Bit 7: Inverter 6  
Bit 8: Rectifier 1  
Bit 9: Rectifier 2
- Remedy:** Contact the manufacturer.

---

#### **F30013 Power unit: Temperature sensor heat sink short-circuit**

- Message class:** Power electronics faulted (5)  
**Reaction:** OFF1 (OFF2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** The heat sink temperature sensor in the power unit is short-circuited.  
Fault value (r0949, interpret hexadecimal):  
Bit 0: Module slot (electronics slot)  
Bit 1: Air intake  
Bit 2: Inverter 1  
Bit 3: Inverter 2  
Bit 4: Inverter 3  
Bit 5: Inverter 4  
Bit 6: Inverter 5  
Bit 7: Inverter 6  
Bit 8: Rectifier 1  
Bit 9: Rectifier 2
- Remedy:** Contact the manufacturer.

---

#### **F30015 (N, A) Power unit: Phase failure motor cable**

- Message class:** Application / technological function faulted (17)  
**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**

**Message class:** Network fault (2)

**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**

**Message class:** Power electronics faulted (5)

**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**

**Message class:** Ground fault / inter-phase short-circuit detected (7)

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** The Power unit has detected a ground fault.

Possible causes:

- ground fault in the power cables.
- Ground fault at the motor.
- CT defective.
- when the brake closes, this causes the hardware DC current monitoring to respond.
- short-circuit at the braking resistor.

Fault value (r0949, interpret decimal):

0:

- the hardware DC current monitoring has responded.
- short-circuit at the braking resistor.

> 0:

Absolute value, summation current [32767 = 271 % rated current].

**Remedy:**

- check the power cable connections.
- check the motor.
- check the CT.

- check the cables and contacts of the brake connection (a wire is possibly broken).
  - check the braking resistor.
- See also: p0287 (Ground fault monitoring thresholds)

---

<b>F30022</b>	<b>Power unit: Monitoring U<sub>ce</sub></b>
<b>Message class:</b>	Ground fault / inter-phase short-circuit detected (7)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	POWER ON
<b>Cause:</b>	In the power unit, the monitoring of the collector-emitter voltage (U <sub>ce</sub> ) of the semiconductor has responded. Possible causes: <ul style="list-style-type: none"><li>- fiber-optic cable interrupted.</li><li>- power supply of the IGBT gating module missing.</li><li>- short-circuit at the power unit output.</li><li>- defective semiconductor in the power unit.</li></ul> 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 <sub>ce</sub> group fault signal interrupted See also: r0949 (Fault value)
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- check the fiber-optic cable and if required, replace.</li><li>- check the power supply of the IGBT gating module (24 V).</li><li>- check the power cable connections.</li><li>- select the defective semiconductor and replace.</li></ul>

---

<b>F30024</b>	<b>Power unit: Overtemperature thermal model</b>
<b>Message class:</b>	Power electronics faulted (5)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The temperature difference between the heat sink and chip has exceeded the permissible limit value. <ul style="list-style-type: none"><li>- the permissible load duty cycle was not maintained.</li><li>- insufficient cooling, fan failure.</li><li>- overload.</li><li>- ambient temperature too high.</li><li>- pulse frequency too high.</li></ul> See also: r0037 (Power unit temperatures)
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- adapt the load duty cycle.</li><li>- check whether the fan is running.</li><li>- check the fan elements.</li><li>- check whether the ambient temperature is in the permissible range.</li><li>- check the motor load.</li><li>- reduce the pulse frequency if this is higher than the rated pulse frequency.</li><li>- if DC braking is active: reduce braking current (p1232).</li></ul>

---

<b>F30025</b>	<b>Power unit: Chip overtemperature</b>
<b>Message class:</b>	Power electronics faulted (5)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The chip temperature of the semiconductor has exceeded the permissible limit value. <ul style="list-style-type: none"><li>- the permissible load duty cycle was not maintained.</li><li>- insufficient cooling, fan failure.</li><li>- overload.</li><li>- ambient temperature too high.</li><li>- pulse frequency too high.</li></ul>



Fault value (r0949, interpret decimal):

Temperature difference between the heat sink and chip [0.01 °C].

**Remedy:**

- adapt the load duty cycle.
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.

Notice:

This fault can only be acknowledged after this alarm threshold for alarm A05001 has been undershot.

See also: r0037 (Power unit temperatures)

**F30027****Power unit: Precharging DC link time monitoring**

**Message class:**

Infeed faulted (13)

**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.

## 4 Faults and alarms

### 4.2 List of faults and alarms

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).

Re 7):

- check the DC link for a ground fault or short circuit.

See also: p0210 (Drive unit line supply voltage)

---

#### **A30030 Power unit: Internal overtemperature alarm**

**Message class:** Power electronics faulted (5)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The temperature inside the drive converter has exceeded the permissible temperature limit.

- insufficient cooling, fan failure.

- overload.

- ambient temperature too high.

Alarm value (r2124, interpret decimal):

Only for internal Siemens troubleshooting.

**Remedy:**

- possibly use an additional fan.

- check whether the ambient temperature is in the permissible range.

Notice:

This fault can only be acknowledged once the permissible temperature limit minus 5 K has been fallen below.

---

#### **A30031 Power unit: Hardware current limiting in phase U**

**Message class:** Power electronics faulted (5)

**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.

---

<b>A30032</b>	<b>Power unit: Hardware current limiting in phase V</b>
<b>Message class:</b>	Power electronics faulted (5)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	Hardware current limit for phase V responded. The pulsing in this phase is inhibited for one pulse period. <ul style="list-style-type: none"><li>- closed-loop control is incorrectly parameterized.</li><li>- fault in the motor or in the power cables.</li><li>- the power cables exceed the maximum permissible length.</li><li>- motor load too high</li><li>- power unit defective.</li></ul> Note: Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.
<b>Remedy:</b>	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). <ul style="list-style-type: none"><li>- check the motor circuit configuration (star/delta).</li><li>- check the motor load.</li><li>- check the power cable connections.</li><li>- check the power cables for short-circuit or ground fault.</li><li>- check the length of the power cables.</li></ul>

---

<b>A30033</b>	<b>Power unit: Hardware current limiting in phase W</b>
<b>Message class:</b>	Power electronics faulted (5)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	Hardware current limit for phase W responded. The pulsing in this phase is inhibited for one pulse period. <ul style="list-style-type: none"><li>- closed-loop control is incorrectly parameterized.</li><li>- fault in the motor or in the power cables.</li><li>- the power cables exceed the maximum permissible length.</li><li>- motor load too high</li><li>- power unit defective.</li></ul> Note: Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- 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).</li><li>- check the motor circuit configuration (star/delta).</li><li>- check the motor load.</li><li>- check the power cable connections.</li><li>- check the power cables for short-circuit or ground fault.</li><li>- check the length of the power cables.</li></ul>

---

<b>A30034</b>	<b>Power unit: Internal overtemperature</b>
<b>Message class:</b>	Power electronics faulted (5)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The alarm threshold for internal overtemperature has been reached. If the temperature inside the unit continues to increase, fault F30036 may be triggered. <ul style="list-style-type: none"><li>- ambient temperature might be too high.</li><li>- insufficient cooling, fan failure.</li></ul> Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- check the ambient temperature.</li><li>- check the fan for the inside of the unit.</li></ul>

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---

**F30035 Power unit: Air intake overtemperature**

**Message class:** Power electronics faulted (5)  
**Reaction:** OFF1 (OFF2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** 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.  
Fault value (r0949, interpret decimal):  
Temperature [0.01 °C].  
**Remedy:**  
- 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.

---

**F30036 Power unit: Internal overtemperature**

**Message class:** Power electronics faulted (5)  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** The temperature inside the drive converter has exceeded the permissible temperature limit.  
- insufficient cooling, fan failure.  
- overload.  
- ambient temperature too high.  
Fault value (r0949, interpret decimal):  
Only for internal Siemens troubleshooting.  
**Remedy:**  
- 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.

---

**F30037 Power unit: Rectifier overtemperature**

**Message class:** Power electronics faulted (5)  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** The temperature in the rectifier of the power unit has exceeded the permissible temperature limit.  
- insufficient cooling, fan failure.  
- overload.  
- ambient temperature too high.  
- line supply phase failure.  
Fault value (r0949, interpret decimal):  
Temperature [0.01 °C].  
**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.  
- check the line supply phases.  
Notice:  
This fault can only be acknowledged after this alarm threshold for alarm A05004 has been undershot.

---

<b>A30042</b>	<b>Power unit: Fan has reached the maximum operating hours</b>
<b>Message class:</b>	Power electronics faulted (5)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The maximum operating time of at least one fan will soon be reached, or has already been exceeded. Fault value (r0949, interpret binary): Bit 0: heat sink fan will reach the maximum operating time in 500 hours. Bit 1: heat sink fan has exceeded the maximum operating time. Bit 8: internal device fan will reach the maximum operating time in 500 hours. Bit 9: internal device fan has exceeded the maximum operating time. Note: The maximum operating time of the heat sink fan in the power unit is displayed in p0252. The maximum operating time of the internal device fan in the power unit is internally specified and is fixed.
<b>Remedy:</b>	For the fan involved, carry out the following: - replace the fan. - reset the operating hours counter (p0251, p0254).
<hr/>	
<b>A30049</b>	<b>Power unit: Internal fan faulty</b>
<b>Message class:</b>	Auxiliary unit faulted (20)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The internal fan has failed.
<b>Remedy:</b>	Check the internal fan and replace if necessary.
<hr/>	
<b>F30051</b>	<b>Power unit: Motor holding brake short circuit detected</b>
<b>Message class:</b>	External measured value / signal state outside the permissible range (16)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	A short-circuit at the motor holding brake terminals has been detected. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.
<b>Remedy:</b>	- check the motor holding brake for a short-circuit. - check the connection and cable for the motor holding brake.
<hr/>	
<b>F30052</b>	<b>EEPROM data error</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	POWER ON
<b>Cause:</b>	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.
<b>Remedy:</b>	Replace power unit module.
<hr/>	
<b>A30054 (F, N)</b>	<b>Power unit: Undervoltage when opening the brake</b>
<b>Message class:</b>	Supply voltage fault (undervoltage) (3)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	When the brake is being opened, it is detected that the power supply voltage is less than $24\text{ V} - 10\% = 21.6\text{ V}$ . Alarm value (r2124, interpret decimal): Supply voltage fault [0.1 V]. Example: Alarm value = 195 --> voltage = 19.5 V

## 4 Faults and alarms

### 4.2 List of faults and alarms

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**Remedy:** Check the 24 V voltage for stability and value.

---

#### **F30055 Power unit: Braking chopper overcurrent**

**Message class:** Braking Module faulted (14)

**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**

**Message class:** Network fault (2)

**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. For booksize and chassis power units, the duration also depends on how long the alarm has been active.

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**

**Message class:** Auxiliary unit faulted (20)

**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.

---

#### **A30065 (F, N) Voltage measured values not plausible**

**Message class:** Power electronics faulted (5)

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The voltage measurement supplies values that are not plausible

Bit01: Phase U.

Bit02: Phase V.

Bit03: Phase W.

**Remedy:** - Deactivate voltage measurement (p247.0 = 0).  
- Deactivate flying restart with voltage measurement (p247.5 = 0) and deactivate fast flying restart (p1780.11 = 0).

---

#### **F30071 No new actual values received from the Power Module**

**Message class:** Internal (DRIVE-CLiQ) communication error (12)

**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.

---

<b>F30072</b>	<b>Setpoints can no longer be transferred to the Power Module</b>
<b>Message class:</b>	Internal (DRIVE-CLiQ) communication error (12)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	More than one setpoint telegram was not able to be transferred to the power unit module.
<b>Remedy:</b>	Check the interface (adjustment and locking) to the power unit module.
<b>F30074 (A)</b>	<b>Communication error between the Control Unit and Power Module</b>
<b>Message class:</b>	Internal (DRIVE-CLiQ) communication error (12)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	Communications between the Control Unit (CU) and Power Module (PM) via the interface no longer possible. The CU may have been withdrawn or is incorrectly inserted. Fault value (r0949, interpret hexadecimal): 0 hex: - a Control Unit with external 24 V supply was withdrawn from the Power Module during operation. - with the Power Module switched off, the external 24 V supply for the Control unit was interrupted for some time. 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.
<b>Remedy:</b>	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.
<b>F30075</b>	<b>Configuration of the power unit unsuccessful</b>
<b>Message class:</b>	Internal (DRIVE-CLiQ) communication error (12)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	A communication error has occurred while configuring the power unit using the Control Unit. The cause is not clear. Fault value (r0949, interpret decimal): 0: The output filter initialization was unsuccessful. 1: Activation/deactivation of the regenerative feedback functionality was unsuccessful.
<b>Remedy:</b>	- acknowledge the fault and continue operation. - if the fault reoccurs, carry out a POWER ON (switch off/on). - if required, replace the power unit.
<b>F30080</b>	<b>Power unit: Current increasing too quickly</b>
<b>Message class:</b>	Power electronics faulted (5)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	The power unit has detected an excessive rate of rise in the overvoltage range. - closed-loop control is incorrectly parameterized. - motor has a short-circuit or fault to ground (frame). - U/f operation: Up ramp set too low. - U/f operation: rated current of motor much greater than that of power unit. - power cables are not correctly connected.

## 4 Faults and alarms

### 4.2 List of faults and alarms

---

- 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 power cables for short-circuit or ground fault.
- check the length of the power cables.
- replace power unit.

---

**F30081****Power unit: Switching operations too frequent**

**Message class:**

Power electronics faulted (5)

**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: Up ramp set too low.
- 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 power cables for short-circuit or ground fault.
- check the length of the power cables.
- replace power unit.

---

**F30105****PU: Actual value sensing fault**

**Message class:**

Power electronics faulted (5)

**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**

**Message class:** DC link overvoltage (4)  
**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**

**Message class:** Safety monitoring channel has identified an error (10)  
**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.  
- forced 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.  
1011: Internal fault for the pulse enable in the Power Module.  
9999: Subsequent response to fault F30611.  
**Remedy:**  
- select Safe Torque Off and de-select again.  
- carry out a POWER ON (power off/on) for all components.  
- replace Power Module involved.  
For fault value = 9999:  
- carry out diagnostics for fault F30611.  
Note:  
STO: Safe Torque Off

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**F30611 (A) SI P2: Defect in a monitoring channel**

**Message class:** Safety monitoring channel has identified an error (10)  
**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.  
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 PROFIsafe address (p9610, p9810).  
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 signal changes 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.

## 4 Faults and alarms

### 4.2 List of faults and alarms

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.  
2002: Statuses of the delay timer SS1 on both monitoring channels are different (status of the timer in p9650/p9850).  
2003: Status of the STO terminal on the processor 1 and processor 2 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 fault F01611.

#### 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.
- check the tolerance time F-DI changeover and if required, increase the value (p9650/p9850).

Re fault value = 1001, 1002:

- carry out a POWER ON (power off/on).

Re fault value = 2000, 2001, 2002, 2003:

- 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 fault F01611.

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

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#### N30620 (F, A)

#### SI P2: Safe Torque Off active

**Message class:**

Safety monitoring channel has identified an error (10)

**Reaction:**

NONE

**Acknowledge:**

NONE

**Cause:**

The "Safe Torque Off" (STO) function has been selected on processor 2 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

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#### F30625

#### SI P2: Sign-of-life error in safety data

**Message class:**

Hardware / software error (1)

**Reaction:**

OFF2

**Acknowledge:**

IMMEDIATELY (POWER ON)

**Cause:**

The drive-integrated "Safety Integrated" function on processor 2 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

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**F30649**      **SI P2: Internal software error**

**Message class:** Hardware / software error (1)  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** An internal error in the Safety Integrated software on processor 2 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.

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**F30650**      **SI P2: Acceptance test required**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The drive-integrated "Safety Integrated" function on processor 2 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 2 are not identical (booting).  
- at least one checksum-checked piece of data is defective.  
- Safety parameters set offline and loaded into the Control Unit.  
2000: Reference and actual checksum on processor 2 are not identical (commissioning mode).  
- reference checksum incorrectly entered on processor 2 (p9899 not equal to r9898).  
2003: Acceptance test is required as a safety parameter has been changed.  
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 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))

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<b>F30651</b>	<b>SI P2: Synchronization with Control Unit unsuccessful</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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.
<b>Remedy:</b>	- carry out a POWER ON (power off/on).
<hr/>	
<b>F30655</b>	<b>SI P2: Align monitoring functions</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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.
<b>Remedy:</b>	- carry out a POWER ON (power off/on). - check the electrical cabinet design and cable routing for EMC compliance
<hr/>	
<b>F30656</b>	<b>SI P2: Parameter processor 2 parameter error</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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.
<b>Remedy:</b>	- re-commission the safety functions. - replace the memory card or Control Unit. For fault value = 129: - activate the safety commissioning mode (p0010 = 95). - 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.
<hr/>	
<b>F30659</b>	<b>SI P2: Write request for parameter rejected</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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.

18: An attempt was made to enable the PROFIsafe function for Basic Functions 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**

**Message class:** Hardware / software error (1)

**Reaction:** OFF2

**Acknowledge:** POWER ON

**Cause:** A module-internal communication error has occurred.

Fault value (r0949, interpret hexadecimal):

Only for internal Siemens troubleshooting.

**Remedy:**

- carry out a POWER ON (power off/on).

- upgrade firmware to later version.

- contact the Hotline.

**F30664 Error while booting**

**Message class:** Hardware / software error (1)

**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**

**Message class:** Hardware / software error (1)

**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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<b>A30666 (F)</b>	<b>SI Motion P2: Steady-state (static) 1 signal at the F-DI for safe acknowledgment</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	Set the fail-safe digital input (F-DI) to a logical 0 signal (p10106). Note: F-DI: Failsafe Digital Input

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<b>F30680</b>	<b>SI Motion P2: Checksum error safety monitoring functions</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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. 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.
<b>Remedy:</b>	- check the safety-relevant parameters and if required, correct. - set the reference checksum to the actual checksum. - execute the function "Copy RAM to ROM". - perform a POWER ON if safety parameters requiring a POWER ON have been modified. - carry out an acceptance test.

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<b>F30681</b>	<b>SI Motion P1: Incorrect parameter value</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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 information available.  xxxx = 9301: It is not permissible to enable the function "n < nx hysteresis and filtering" (p9301.16) in conjunction with the function "Extended functions without selection" (p9801.5). xxxx = 9385: For Safety without encoder and synchronous motor, p9385 must be set to 4.
<b>Remedy:</b>	Correct the parameter value. Note: For different values in the two monitoring channels, start the copy function for SI parameters on the drive (p9700 = 57 hex).

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<b>F30682</b>	<b>SI Motion P2: Monitoring function not supported</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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). 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.
<b>Remedy:</b>	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
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<b>F30683</b>	<b>SI Motion P2: SLS enable missing</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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.
<b>Remedy:</b>	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))
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<b>F30692</b>	<b>SI Motion P2: Parameter value not permitted for encoderless</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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))
<b>Remedy:</b>	Correct the parameter specified in the fault value. See also: p9301 (SI Motion enable safety functions (processor 2)), p9501 (SI Motion enable safety functions (processor 1))

<b>A30693 (F)</b>	<b>SI P2: Safety parameter settings changed, POWER ON required</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	- execute the function "Copy RAM to ROM". - carry out a POWER ON (power off/on).
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<b>C30700</b>	<b>SI Motion P2: STOP A initiated</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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".
<b>Remedy:</b>	- 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 using "Acknowledge internal event". SAM: Safe Acceleration Monitor (safe acceleration monitoring) SBR: Safe Brake Ramp (safe brake ramp monitoring)
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<b>C30701</b>	<b>SI Motion P2: STOP B initiated</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE (OFF3)
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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 p9360 is fallen below, message C30700 "STOP A initiated" is output. 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".
<b>Remedy:</b>	- 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. Note: This message can be acknowledged using "Acknowledge internal event".



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<b>C30706</b>	<b>SI Motion P2: SAM/SBR limit exceeded</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	<p>Motion monitoring functions with set acceleration monitoring (SAM, p9306 = 3):</p> <ul style="list-style-type: none"> <li>- after initiating STOP B (SS1) the velocity has exceeded the selected tolerance.</li> </ul> <p>Motion monitoring functions with set brake ramp monitoring (SBR, p9306 = 1):</p> <ul style="list-style-type: none"> <li>- after initiating STOP B (SS1) or SLS changeover to the lower speed stage, the speed has exceeded the selected tolerance.</li> </ul> <p>The drive is shut down by the message C30700 "SI Motion P2: STOP A initiated".</p>
<b>Remedy:</b>	<p>Check the braking behavior and, if necessary, adapt the parameterization of the parameter settings of the "SAM" or the "SBR" function.</p> <p>This message can be acknowledged without a POWER ON using "Acknowledge internal event".</p> <p>SAM: Safe Acceleration Monitor (safe acceleration monitoring)  SBR: Safe Brake Ramp (safe brake ramp monitoring)  SI: Safety Integrated</p> <p>See also: p9348, p9381, p9382, p9383, p9548</p>

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<b>C30711</b>	<b>SI Motion P2: Defect in a monitoring channel</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	<p>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.</p> <p>If at least one monitoring function is active, then message C30701 "SI Motion: STOP B initiated" is output.</p> <p>The following message values may also occur in the following cases if the cause that is explicitly mentioned does not apply:</p> <ul style="list-style-type: none"> <li>- synchronization error between processor 1 and processor 2.</li> </ul> <p>Message value (r2124, interpret decimal):</p> <p>0 ... 999:</p> <p>Number of the cross-compared data that resulted in this message.</p> <p>The significance of the individual message values is described in safety message C01711.</p> <p>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.</p> <p>See also: r9725 (SI Motion diagnostics STOP F)</p>
<b>Remedy:</b>	<p>Re message value = 1040:</p> <ul style="list-style-type: none"> <li>- de-select encoderless monitoring functions, select and de-select STO.</li> <li>- if monitoring function is active, issue "SLS" pulse enable within 5 s of de-selecting STO.</li> </ul> <p>Re other message values:</p> <ul style="list-style-type: none"> <li>- the significance of the individual message values is described in safety message C01711.</li> </ul> <p>Note:</p> <p>This message can be acknowledged using "Acknowledge internal event".</p>

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<b>C30712</b>	<b>SI Motion P2: Defect in F-IO processing</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	<p>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.</p> <p>The safety message C30711 with message value 0 is also displayed due to initiation of STOP F.</p> <p>If at least one monitoring function is active, then safety message C30701 "SI Motion: STOP B initiated" is output.</p> <p>Message value (r2124, interpret decimal):</p> <p>Number of the cross-compared data that resulted in this message.</p> <p>See safety message C01712 for a description of the message values.</p>
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- check parameterization in the parameters involved and correct if required.</li><li>- ensure equality by copying the SI data to processor 2 and then carry out an acceptance test.</li></ul> <p>Note:</p> <p>This message can be acknowledged via F-DI or PROFIsafe.</p>
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<b>C30714</b>	<b>SI Motion P2: Safely-Limited Speed exceeded</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	<p>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).</p> <p>Message value (r2124, interpret decimal):</p> <p>100: SLS1 exceeded.</p> <p>200: SLS2 exceeded.</p> <p>300: SLS3 exceeded.</p> <p>400: SLS4 exceeded.</p>
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- check the traversing/motion program in the control.</li><li>- check the limits for "SLS" function and if required, adapt (p9331).</li></ul> <p>Note:</p> <p>This message can be acknowledged using "Acknowledge internal event".</p> <p>SLS: Safely-Limited Speed</p> <p>See also: p9331 (SI Motion SLS limit values (processor 2)), p9363 (SI Motion SLS stop response (processor 2))</p>
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<b>C30716</b>	<b>SI Motion P2: Tolerance for safe motion direction exceeded</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	<p>The tolerance for the "safe motion direction" function was exceeded. The drive is stopped as a result of the configured stop response (p9366).</p> <p>Message value (r2124, interpret decimal):</p> <p>0: Tolerance for the "safe motion direction positive" function exceeded.</p> <p>1: Tolerance for the "safe motion direction negative" function exceeded.</p>
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- check the traversing/motion program in the control.</li><li>- check the tolerance for "SDI" function and if required, adapt (p9364).</li></ul> <p>This message can be acknowledged as follows:</p> <ul style="list-style-type: none"><li>- Deselect the "SDI" function and select again.</li><li>- carry out safe acknowledgment via "Acknowledgment internal event".</li></ul> <p>Note:</p> <p>SDI: Safe Direction (safe motion direction)</p> <p>SI: Safety Integrated</p> <p>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))</p>

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<b>C30770</b>	<b>SI Motion P2: Discrepancy error affecting the failsafe inputs</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	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 message is only signaled for the first error that occurs.
<b>Remedy:</b>	- 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 corresponds to twice the value of p10002, then the following formulas should be checked: - $p10002 < (tp / 2) - td$ (discrepancy time must be less than half the period minus the actual discrepancy time) - $p10002 \geq p9500$ (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 monitoring cycle (see p9500). $tp$ = period for a switching operation in ms. When debounce p10017 is active, the discrepancy time is directly specified by the debounce time. If the period of a cyclic switching pulse corresponds to twice the debounce time, then the following formulas should be checked. - $p10002 < p10017 + 1 \text{ ms} - td$ - $p10002 > td$ - $p10002 \geq p9500$ Example: For a 12 ms SI monitoring cycle and a switching frequency of 110 ms ( $p10017 = 0$ ), the maximum discrepancy time which can be set is as follows: $p10002 \leq (110/2 \text{ ms}) - 12 \text{ ms} = 43 \text{ ms}$ Rounded-off, $p10002 \leq 36 \text{ ms}$ is obtained (since the discrepancy time can only be accepted as a whole SI monitoring cycle, the value will need to be rounded up or down to a whole SI monitoring cycle if the result is not an exact multiple of an SI monitoring cycle). Note: F-DI: Failsafe Digital Input

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<b>A30788</b>	<b>Automatic test stop: wait for STO deselection via SMM</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The STO function is selected via Safety Extended Functions or a safety message is present, which results in STO. The automatic test stop was not able to be carried out since the power up. The automatic test stop is performed after deselecting STO.
<b>Remedy:</b>	- Deselect STO via Safety Extended Functions. - Remove the cause of the safety message and acknowledge the fault.

## 4 Faults and alarms

### 4.2 List of faults and alarms

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<b>C30798</b>	<b>SI Motion P2: Test stop running</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	The test stop is active.
<b>Remedy:</b>	Not necessary. The message is withdrawn when the test stop is finished.

---

<b>C30799</b>	<b>SI Motion P2: Acceptance test mode active</b>
<b>Message class:</b>	Safety monitoring channel has identified an error (10)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY (POWER ON)
<b>Cause:</b>	The acceptance test mode is active.
<b>Remedy:</b>	Not necessary. The message is withdrawn when exiting the acceptance test mode.

---

<b>N30800 (F)</b>	<b>Power unit: Group signal</b>
<b>Message class:</b>	Power electronics faulted (5)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The power unit has detected at least one fault.
<b>Remedy:</b>	Evaluate the other messages that are presently available.

---

<b>F30802</b>	<b>Power unit: Time slice overflow</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	A time slice overflow has occurred. Fault value (r0949, interpret decimal): xx: Time slice number xx
<b>Remedy:</b>	- carry out a POWER ON (power off/on) for all components. - upgrade firmware to later version. - contact the Hotline.

---

<b>F30804 (N, A)</b>	<b>Power unit: CRC</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2 (OFF1, OFF3)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	A CRC error has occurred for the power unit.
<b>Remedy:</b>	- carry out a POWER ON (power off/on) for all components. - upgrade firmware to later version. - contact the Hotline.

---

<b>F30805</b>	<b>Power unit: EEPROM checksum error</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	Internal parameter data is corrupted. Fault value (r0949, interpret hexadecimal): 01: EEPROM access error. 02: Too many blocks in the EEPROM.
<b>Remedy:</b>	Replace the module.

---

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**F30809 Power unit: Switching information not valid**

**Message class:** Hardware / software error (1)  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** For 3P gating unit, the following applies:  
The last switching status word in the setpoint telegram is identified by the end ID. Such an end ID was not found.  
**Remedy:**  
- carry out a POWER ON (power off/on) for all components.  
- upgrade firmware to later version.  
- contact the Hotline.

---

**A30810 (F) Power unit: Watchdog timer**

**Message class:** Hardware / software error (1)  
**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**

**Message class:** Hardware / software error (1)  
**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.

---

**F30903 Power unit: I2C bus error occurred**

**Message class:** Hardware / software error (1)  
**Reaction:** OFF2 (IASC/DCBRK, 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**

**Message class:** Power electronics faulted (5)  
**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.

## 4 Faults and alarms

### 4.2 List of faults and alarms

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<b>F30950</b>	<b>Power unit: Internal software error</b>
<b>Message class:</b>	Hardware / software error (1)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	POWER ON
<b>Cause:</b>	An internal software error has occurred. Fault value (r0949, interpret decimal): Information about the fault source. Only for internal Siemens troubleshooting.
<b>Remedy:</b>	- If necessary, upgrade the firmware in the power unit to a later version. - contact the Hotline.

---

<b>A30999 (F, N)</b>	<b>Power unit: Unknown alarm</b>
<b>Message class:</b>	Power electronics faulted (5)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	- replace the firmware on the power unit by an older firmware version (r0128). - upgrade the firmware on the Control Unit (r0018).

---

<b>F31142 (N, A)</b>	<b>Encoder 1: Battery voltage fault</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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.
<b>Remedy:</b>	Replace battery.

---

<b>F31152 (N, A)</b>	<b>Encoder 1: Maximum input frequency exceeded</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
<b>Acknowledge:</b>	PULSE INHIBIT
<b>Cause:</b>	The maximum input frequency of the encoder evaluation has been exceeded. Fault value (r0949, interpret decimal): Actual input frequency in Hz.
<b>Remedy:</b>	- Reduce the speed. - Use an encoder with a lower pulse number (p0408).

---

<b>F31160 (N, A)</b>	<b>Encoder 1: Analog sensor channel A failed</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	ENCODER (IASC/DCBRK, NONE)
<b>Acknowledge:</b>	PULSE INHIBIT
<b>Cause:</b>	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).
<b>Remedy:</b>	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).

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For fault value = 3:  
- check the range limit setting and increase it if necessary (p4676).

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<b>F31161 (N, A)</b>	<b>Encoder 1: Analog sensor channel B failed</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	ENCODER (IASC/DCBRK, NONE)
<b>Acknowledge:</b>	PULSE INHIBIT
<b>Cause:</b>	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).
<b>Remedy:</b>	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).

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<b>F31163 (N, A)</b>	<b>Encoder 1: Analog sensor position value exceeds limit value</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	ENCODER (IASC/DCBRK, NONE)
<b>Acknowledge:</b>	PULSE INHIBIT
<b>Cause:</b>	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.
<b>Remedy:</b>	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).

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<b>A31442 (F, N)</b>	<b>Encoder 1: Battery voltage pre-alarm</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	When switched-off, the encoder uses a battery to back up the multiturn information. The multiturn information can no longer be buffered if the battery voltage drops even further.
<b>Remedy:</b>	Replace battery.

---

<b>A31460 (N)</b>	<b>Encoder 1: Analog sensor channel A failed</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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).
<b>Remedy:</b>	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).

<b>A31461 (N)</b>	<b>Encoder 1: Analog sensor channel B failed</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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).
<b>Remedy:</b>	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).
<b>A31462 (N)</b>	<b>Encoder 1: Analog sensor no channel active</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	Channel A and B are not activated for the analog sensor.
<b>Remedy:</b>	- activate channel A and/or channel B (p4670). - check the encoder configuration (p0404.17).
<b>A31463 (N)</b>	<b>Encoder 1: Analog sensor position value exceeds limit value</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	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).
<b>A31470 (F, N)</b>	<b>Encoder 1: Soiling detected</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	- check the plug connections. - replace the encoder or encoder cable.



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<b>F31912</b>	<b>Encoder 1: Device combination is not permissible</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	ENCODER (IASC/DCBRK, NONE)
<b>Acknowledge:</b>	PULSE INHIBIT
<b>Cause:</b>	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 $\mu$ s) 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
<b>Remedy:</b>	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).

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<b>A31915 (F, N)</b>	<b>Encoder 1: Configuration error</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	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.

---

<b>A31930 (N)</b>	<b>Encoder 1: Data logger has saved data</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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).

## 4 Faults and alarms

### 4.2 List of faults and alarms

Note:  
Only Siemens can evaluate the BIN files.

**Remedy:** Not necessary.  
The alarm disappears automatically.  
The data logger is ready to record the next fault case.

---

#### **A31940 (F, N) Encoder 1: Spindle sensor S1 voltage incorrect**

**Message class:** Application / technological function faulted (17)  
**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.

---

#### **F32142 (N, A) Encoder 2: Battery voltage fault**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Reaction:** OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer sufficient to check the multiturn information.

**Remedy:** Replace battery.

---

#### **F32152 (N, A) Encoder 2: Maximum input frequency exceeded**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Reaction:** OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)  
**Acknowledge:** PULSE INHIBIT  
**Cause:** The maximum input frequency of the encoder evaluation has been exceeded.  
Fault value (r0949, interpret decimal):  
Actual input frequency in Hz.

**Remedy:**

- Reduce the speed.
- Use an encoder with a lower pulse number (p0408).

---

#### **F32160 (N, A) Encoder 2: Analog sensor channel A failed**

**Message class:** Position/speed actual value incorrect or not available (11)  
**Reaction:** OFF1 (IASC/DCBRK, NONE)  
**Acknowledge:** PULSE INHIBIT  
**Cause:** The input voltage of the analog sensor is outside the permissible limits.  
Fault value (r0949, interpret decimal):  
1: Input voltage outside detectable measuring range.  
2: Input voltage outside the measuring range set in (p4673).  
3: The absolute value of the input voltage has exceeded the range limit (p4676).

**Remedy:**

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).

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<b>F32161 (N, A)</b>	<b>Encoder 2: Analog sensor channel B failed</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	OFF1 (IASC/DCBRK, NONE)
<b>Acknowledge:</b>	PULSE INHIBIT
<b>Cause:</b>	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).
<b>Remedy:</b>	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).
<hr/>	
<b>F32163 (N, A)</b>	<b>Encoder 2: Analog sensor position value exceeds limit value</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	OFF1 (IASC/DCBRK, NONE)
<b>Acknowledge:</b>	PULSE INHIBIT
<b>Cause:</b>	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.
<b>Remedy:</b>	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).
<hr/>	
<b>A32442 (F, N)</b>	<b>Encoder 2: Battery voltage pre-alarm</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	When switched-off, the encoder uses a battery to back up the multiturn information. The multiturn information can no longer be buffered if the battery voltage drops even further.
<b>Remedy:</b>	Replace battery.
<hr/>	
<b>A32460 (N)</b>	<b>Encoder 2: Analog sensor channel A failed</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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).
<b>Remedy:</b>	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).

<b>A32461 (N)</b>	<b>Encoder 2: Analog sensor channel B failed</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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).
<b>Remedy:</b>	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).
<b>A32462 (N)</b>	<b>Encoder 2: Analog sensor no channel active</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	Channel A and B are not activated for the analog sensor.
<b>Remedy:</b>	- activate channel A and/or channel B (p4670). - check the encoder configuration (p0404.17).
<b>A32463 (N)</b>	<b>Encoder 2: Analog sensor position value exceeds limit value</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	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).
<b>A32470 (F, N)</b>	<b>Encoder 2: Soiling detected</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	- check the plug connections. - replace the encoder or encoder cable.

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<b>F32912</b>	<b>Encoder 2: Device combination is not permissible</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF1 (IASC/DCBRK, NONE)
<b>Acknowledge:</b>	PULSE INHIBIT
<b>Cause:</b>	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 $\mu$ s) 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
<b>Remedy:</b>	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).
<hr/>	
<b>A32915 (F, N)</b>	<b>Encoder 2: Configuration error</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	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.
<hr/>	
<b>A32930 (N)</b>	<b>Encoder 2: Data logger has saved data</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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).

## 4 Faults and alarms

### 4.2 List of faults and alarms

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**

**Message class:** Application / technological function faulted (17)  
**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.

---

#### **F33142 (N, A) Encoder 3: Battery voltage fault**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Reaction:** OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer sufficient to check the multiturn information.

**Remedy:** Replace battery.

---

#### **F33152 (N, A) Encoder 3: Maximum input frequency exceeded**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Reaction:** OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)  
**Acknowledge:** PULSE INHIBIT  
**Cause:** The maximum input frequency of the encoder evaluation has been exceeded.  
Fault value (r0949, interpret decimal):  
Actual input frequency in Hz.

**Remedy:**

- Reduce the speed.
- Use an encoder with a lower pulse number (p0408).

---

#### **F33160 (N, A) Encoder 3: Analog sensor channel A failed**

**Message class:** Position/speed actual value incorrect or not available (11)  
**Reaction:** OFF1 (IASC/DCBRK, NONE)  
**Acknowledge:** PULSE INHIBIT  
**Cause:** The input voltage of the analog sensor is outside the permissible limits.  
Fault value (r0949, interpret decimal):  
1: Input voltage outside detectable measuring range.  
2: Input voltage outside the measuring range set in (p4673).  
3: The absolute value of the input voltage has exceeded the range limit (p4676).

**Remedy:**

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).

---

<b>F33161 (N, A)</b>	<b>Encoder 3: Analog sensor channel B failed</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	OFF1 (IASC/DCBRK, NONE)
<b>Acknowledge:</b>	PULSE INHIBIT
<b>Cause:</b>	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).
<b>Remedy:</b>	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).

---

<b>F33163 (N, A)</b>	<b>Encoder 3: Analog sensor position value exceeds limit value</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	OFF1 (IASC/DCBRK, NONE)
<b>Acknowledge:</b>	PULSE INHIBIT
<b>Cause:</b>	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.
<b>Remedy:</b>	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).

---

<b>A33442 (F, N)</b>	<b>Encoder 3: Battery voltage pre-alarm</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	When switched-off, the encoder uses a battery to back up the multiturn information. The multiturn information can no longer be buffered if the battery voltage drops even further.
<b>Remedy:</b>	Replace battery.

---

<b>A33460 (N)</b>	<b>Encoder 3: Analog sensor channel A failed</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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).
<b>Remedy:</b>	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).

---

<b>A33461 (N)</b>	<b>Encoder 3: Analog sensor channel B failed</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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).
<b>Remedy:</b>	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).

---

<b>A33462 (N)</b>	<b>Encoder 3: Analog sensor no channel active</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	Channel A and B are not activated for the analog sensor.
<b>Remedy:</b>	- activate channel A and/or channel B (p4670). - check the encoder configuration (p0404.17).

---

<b>A33463 (N)</b>	<b>Encoder 3: Analog sensor position value exceeds limit value</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	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).

---

<b>A33470 (F, N)</b>	<b>Encoder 3: Soiling detected</b>
<b>Message class:</b>	Position/speed actual value incorrect or not available (11)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	- check the plug connections. - replace the encoder or encoder cable.

---



---

<b>F33912</b>	<b>Encoder 3: Device combination is not permissible</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	OFF1 (IASC/DCBRK, NONE)
<b>Acknowledge:</b>	PULSE INHIBIT
<b>Cause:</b>	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 $\mu$ s) 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
<b>Remedy:</b>	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).

---

<b>A33915 (F, N)</b>	<b>Encoder 3: Configuration error</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	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.

---

<b>A33930 (N)</b>	<b>Encoder 3: Data logger has saved data</b>
<b>Message class:</b>	Error in the parameterization / configuration / commissioning procedure (18)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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).

## 4 Faults and alarms

### 4.2 List of faults and alarms

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.

---

#### **A33940 (F, N) Encoder 3: Spindle sensor S1 voltage incorrect**

**Message class:** Application / technological function faulted (17)  
**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.

---

#### **F35005 TM54F:parallel connection not supported**

**Message class:** Safety monitoring channel has identified an error (10)  
**Reaction:** NONE  
**Acknowledge:** POWER ON  
**Cause:** The TM54F function with Basic Safety Functions is used. This function is not supported when power units are connected in parallel.  
All drives of the TM54F assume fail safe values, and are not enabled.

**Remedy:**

- deactivate parallel connection or TM54F with Basic Functions.
- copy RAM to ROM.
- carry out a POWER ON (power off/on).

---

#### **F35950 TM: Internal software error**

**Message class:** Hardware / software error (1)  
**Reaction:** OFF2 (NONE)  
**Acknowledge:** POWER ON  
**Cause:** An internal software error has occurred.  
Fault value (r0949, interpret decimal):  
Information about the fault source.  
Only for internal Siemens troubleshooting.

**Remedy:**

- If necessary, upgrade the firmware in the Terminal Module to a later version.
- contact the Hotline.

---

#### **A50001 (F) PROFINET configuration error**

**Message class:** Communication error to the higher-level control system (9)  
**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.

---

<b>A50010 (F)</b>	<b>PROFINET Name of Station invalid</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	PROFINET Name of Station is invalid.
<b>Remedy:</b>	Correct the name of the station (p8920) and activate (p8925 = 2). See also: p8920 (PN Name of Station)

---

<b>A50020 (F)</b>	<b>PROFINET: Second controller missing</b>
<b>Message class:</b>	Communication error to the higher-level control system (9)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	The PROFINET function "Shared Device" has been activated (p8929 = 2). However, only the connection to a PROFINET controller is present.
<b>Remedy:</b>	Check the configuration of the PROFINET controllers as well as the p8929 setting.

---

<b>F50510</b>	<b>FBLOCKS: Logon of the run-time group rejected</b>
<b>Message class:</b>	General drive fault (19)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	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.
<b>Remedy:</b>	- Check number of available hardware sampling times (T_sample < 8 ms) (r7903).

---

<b>F50511</b>	<b>FBLOCKS: Memory no longer available for free function blocks</b>
<b>Message class:</b>	General drive fault (19)
<b>Reaction:</b>	OFF2
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	When the free function blocks were activated, more memory was requested than was available on the Control Unit.
<b>Remedy:</b>	Not necessary.

---

<b>A50513 (F)</b>	<b>FBLOCKS: Run sequence value already assigned</b>
<b>Message class:</b>	General drive fault (19)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	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.
<b>Remedy:</b>	Set another value that is still available on this drive object for the run sequence.

---

<b>A50517</b>	<b>FBLOCKS: Int. meas. active</b>
<b>Message class:</b>	General drive fault (19)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	NONE
<b>Cause:</b>	A Siemens internal measurement has been activated.
<b>Remedy:</b>	Carry out a POWER ON (power off/on) for the Control Unit involved.

<b>F50518</b>	<b>FBLOCKS: Sampling time of free run-time group differs at download</b>
<b>Message class:</b>	General drive fault (19)
<b>Reaction:</b>	NONE
<b>Acknowledge:</b>	IMMEDIATELY
<b>Cause:</b>	<p>In the STARTER/SCOUT project that was downloaded, the hardware sampling time of a free run-time group (1 &lt;= p20000[i] &lt;= 256) was set to a value that was either too low or too high.</p> <p>The sampling time must be between 1 ms and the value r20003 - r20002.</p> <p>If the sampling time of the selected free run-time group is &lt; 1 ms, the equivalent value of 1 ms is used.</p> <p>If the value &gt;= r20003, then the sampling time is set to the next higher or the same software sampling time &gt;= r21003.</p> <p>Fault value (r0949, interpret decimal):</p> <p>Number of the p20000 index of the run-time group where the sampling time is incorrectly set.</p> <p>Number of the run-time group = fault value + 1</p>
<b>Remedy:</b>	<ul style="list-style-type: none"><li>- correctly set the sampling time of the run-time group.</li><li>- if required, take all of the blocks from the run-time group.</li></ul> <p>Note:</p> <p>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.</p>

# Appendix

# A

## Content

A.1	ASCII table (characters that can be displayed)	814
A.2	Motor code list	817
A.3	List of abbreviations	818

## A.1 ASCII table (characters that can be displayed)

The following table includes the decimal and hexadecimal notation of ASCII characters that can be displayed (printable).

Table A-1 ASCII table (characters that can be displayed)

Character	Decimal	Hexadecimal	Meaning
	32	20	Space
!	33	21	Exclamation mark
"	34	22	Quotation mark
#	35	23	Number sign
\$	36	24	Dollar
%	37	25	Percent
&	38	26	Ampersand
'	39	27	Apostrophe, closing single quotation mark
(	40	28	Opening parenthesis
)	41	29	Closing parenthesis
*	42	2A	Asterisk
+	43	2B	Plus
,	44	2C	Comma
-	45	2D	Hyphen, minus
.	46	2E	Period, decimal point
/	47	2F	Slash, slant
0	48	30	Digit 0
1	49	31	Digit 1
2	50	32	Digit 2
3	51	33	Digit 3
4	52	34	Digit 4
5	53	35	Digit 5
6	54	36	Digit 6
7	55	37	Digit 7
8	56	38	Digit 8
9	57	39	Digit 9
:	58	3A	Colon
;	59	3B	Semicolon
<	60	3C	Less than
=	61	3D	Equals
>	62	3E	Greater than
?	63	3F	Question mark
@	64	40	Commercial At

Table A-1 ASCII table (characters that can be displayed), continued

Character	Decimal	Hexadecimal	Meaning
A	65	41	Capital letter A
B	66	42	Capital letter B
C	67	43	Capital letter C
D	68	44	Capital letter D
E	69	45	Capital letter E
F	70	46	Capital letter F
G	71	47	Capital letter G
H	72	48	Capital letter H
I	73	49	Capital letter I
J	74	4A	Capital letter J
K	75	4B	Capital letter K
L	76	4C	Capital letter L
M	77	4D	Capital letter M
N	78	4E	Capital letter N
O	79	4F	Capital letter O
P	80	50	Capital letter P
Q	81	51	Capital letter Q
R	82	52	Capital letter R
S	83	53	Capital letter S
T	84	54	Capital letter T
U	85	55	Capital letter U
V	86	56	Capital letter V
W	87	57	Capital letter W
X	88	58	Capital letter X
Y	89	59	Capital letter Y
Z	90	5A	Capital letter Z
[	91	5B	Opening bracket
\	92	5C	Backslash
]	93	5D	Closing bracket
^	94	5E	Circumflex
_	95	5F	Underline
'	96	60	Opening single quotation mark
a	97	61	Small letter a
b	98	62	Small letter b
c	99	63	Small letter c
d	100	64	Small letter d

Table A-1 ASCII table (characters that can be displayed), continued

Character	Decimal	Hexadecimal	Meaning
e	101	65	Small letter e
f	102	66	Small letter f
g	103	67	Small letter g
h	104	68	Small letter h
i	105	69	Small letter i
j	106	6A	Small letter j
k	107	6B	Small letter k
l	108	6C	Small letter l
m	109	6D	Small letter m
n	110	6E	Small letter n
o	111	6F	Small letter o
p	112	70	Small letter p
q	113	71	Small letter q
r	114	72	Small letter r
s	115	73	Small letter s
t	116	74	Small letter t
u	117	75	Small letter u
v	118	76	Small letter v
w	119	77	Small letter w
x	120	78	Small letter x
y	121	79	Small letter y
z	122	7A	Small letter z
{	123	7B	Opening brace
	124	7C	Vertical line
}	125	7D	Closing brace
~	126	7E	Tilde



## A.2 Motor code list

Table A-2 Motor code for synchronous motors

Order number	Motor type (p0300)	Motor code (p0301)
1LE400x-1ABxx-xxxx	204	20401
1LE400x-1BBxx-xxxx	204	20402

## A.3 List of abbreviations

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### Note

The following list of abbreviations includes all abbreviations and their meanings used in the entire SINAMICS family of drives.

---

Abbreviation	Source of abbreviation	Meaning
<b>A</b>		
A...	Alarm	Alarm
AC	Alternating Current	Alternating current
ADC	Analog Digital Converter	Analog-digital converter
AI	Analog Input	Analog input
AIM	Active Interface Module	Active Interface Module
ALM	Active Line Module	Active Line Module
AO	Analog Output	Analog output
AOP	Advanced Operator Panel	Advanced Operator Panel
APC	Advanced Positioning Control	Advanced Positioning Control
AR	Automatic Restart	Automatic restart
ASC	Armature Short-Circuit	Armature short-circuit
ASCII	American Standard Code for Information Interchange	American standard code for information interchange
AS-i	AS-Interface (Actuator Sensor Interface)	AS-interface (open bus system in automation technology)
ASM	Asynchronmotor	Induction motor
<b>B</b>		
BB	Betriebsbedingung	Operating condition
BERO	-	Proximity switch
BI	Binector Input	Binector input
BIA	Berufsgenossenschaftliches Institut für Arbeitssicherheit	BG-Institute for Occupational Safety and Health
BICO	Binector Connector Technology	Binector connector technology
BLM	Basic Line Module	Basic Line Module
BO	Binector Output	Binector output
BOP	Basic Operator Panel	Basic Operator Panel
<b>C</b>		
C	Capacitance	Capacitance
C...	-	Safety message
CAN	Controller Area Network	Serial bus system
CBC	Communication Board CAN	Communication Board CAN
CBE	Communication Board Ethernet	Communication Board PROFINET (Ethernet)
CD	Compact Disk	Compact disk
CDS	Command Data Set	Command data set
CF card	CompactFlash card	CompactFlash card
CI	Connector Input	Connector input

<b>Abbreviation</b>	<b>Source of abbreviation</b>	<b>Meaning</b>
CLC	Clearance Control	Clearance control
CNC	Computer Numerical Control	Computer-supported numerical control
CO	Connector Output	Connector output
CO/BO	Connector Output / Binector Output	Connector/binector output
COB ID	CAN Object Identification	CAN object identification
CoL	Certificate of License	Certificate of License
COM	Common contact of a changeover relay	Center contact on a changeover contact
COMM	Commissioning	Commissioning
CP	Communications Processor	Communications processor
CPU	Central Processing Unit	Central processing unit
CRC	Cyclic Redundancy Check	Cyclic redundancy check
CSM	Control Supply Module	Control Supply Module
CU	Control Unit	Control Unit
CUA	Control Unit Adapter	Control Unit Adapter
CUD	Control Unit DC MASTER	Control Unit DC MASTER
<b>D</b>		
DAC	Digital Analog Converter	Digital-analog converter
DC	Direct Current	Direct current
DCB	Drive Control Block	Drive Control Block
DCBRK	DC Brake	DC braking
DCC	Drive Control Chart	Drive Control Chart
DCN	Direct Current Negative	Direct current negative
DCP	Direct Current Positive	Direct current positive
DDS	Drive Data Set	Drive data set
DI	Digital Input	Digital input
DI/DO	Digital Input / Digital Output	Bidirectional digital input/output
DMC	DRIVE-CLiQ Hub Module Cabinet	DRIVE-CLiQ Hub Module Cabinet
DME	DRIVE-CLiQ Hub Module External	DRIVE-CLiQ Hub Module External
DMM	Double Motor Module	Double Motor Module
DO	Digital Output	Digital output
DO	Drive Object	Drive object
DP	Decentralized Peripherals	Distributed peripherals
DPRAM	Dual Ported Random Access Memory	Dual-port random access memory
DQ	DRIVE-CLiQ	DRIVE-CLiQ
DRAM	Dynamic Random Access Memory	Dynamic random access memory
DRIVE-CLiQ	Drive Component Link with IQ	Drive Component Link with IQ
DSC	Dynamic Servo Control	Dynamic Servo Control
DTC	Digital Time Clock	Timer
<b>E</b>		
EASC	External Armature Short-Circuit	External armature short-circuit
EDS	Encoder data set	Encoder data set
EEPROM	Electrically Erasable Programmable Read-Only Memory	Electrically Erasable Programmable Read-Only-Memory

<b>Abbreviation</b>	<b>Source of abbreviation</b>	<b>Meaning</b>
EGB	Elektrostatisch gefährdete Baugruppen	Electrostatic sensitive devices
ELCB	Earth Leakage Circuit-Breaker	Residual current operated circuit breaker
ELP	Earth Leakage Protection	Ground-fault monitoring
EMC	Electromagnetic Compatibility	Electromagnetic compatibility
EMF	Electromotive Force	Electromotive force
EMK	Elektromotorische Kraft	Electromotive force
EMV	Elektromagnetische Verträglichkeit	Electromagnetic compatibility
EN	Europäische Norm	European standard
EnDat	Encoder-Data-Interface	Encoder interface
EP	Enable Pulses	Enable pulses
EPOS	Einfachpositionierer	Basic positioner
ES	Engineering System	Engineering system
ESB	Ersatzschaltbild	Equivalent circuit diagram
ESD	Electrostatic Sensitive Devices	Electrostatic sensitive devices
ESM	Essential Service Mode	Essential service mode
ESR	Extended Stop and Retract	Extended stop and retract
<b>F</b>		
F...	Fault	Fault
FAQ	Frequently Asked Questions	Frequently asked questions
FBLOCKS	Free Blocks	Free function blocks
FCC	Function Control Chart	Function control chart
FCC	Flux Current Control	Flux current control
FD	Function Diagram	Function diagram
F-DI	Fail-safe Digital Input	Fail-safe digital input
F-DO	Fail-safe Digital Output	Fail-safe digital output
FEM	Fremderregter Synchronmotor	Separately excited synchronous motor
FEPROM	Flash EPROM	Non-volatile write and read memory
FG	Function Generator	Function generator
FI	-	Residual current
FOC	Fiber-Optic Cable	Fiber-optic cable
FP	Funktionsplan	Function diagram
FPGA	Field Programmable Gate Array	Field programmable gate array
FW	Firmware	Firmware
<b>G</b>		
GB	Gigabyte	Gigabyte
GC	Global Control	Global control telegram (broadcast telegram)
GND	Ground	Reference potential for all signal and operating voltages, usually defined as 0 V (also referred to as M)
GSD	Generic Station Description	Generic Station Description: Describes the features of a PROFIBUS slave
GSV	Gate Supply Voltage	Gate supply voltage
GUID	Globally Unique Identifier	Globally unique identifier

Abbreviation	Source of abbreviation	Meaning
<b>H</b>		
HF	High Frequency	High frequency
HFD	Hochfrequenzdrossel	High-frequency reactor
HLA	Hydraulic Linear Actuator	Hydraulic linear drive
HLG	Hochlaufgeber	Ramp-function generator
HM	Hydraulic Module	Hydraulic Module
HMI	Human Machine Interface	Human machine interface
HTL	High-Threshold Logic	Logic with high fault threshold
HW	Hardware	Hardware
<b>I</b>		
i. V.	In Vorbereitung	Under development: This property is currently not available
I/O	Input/Output	Input/output
I2C	Inter-Integrated Circuit	Internal serial data bus
IASC	Internal Armature Short-Circuit	Internal armature short-circuit
IBN	Inbetriebnahme	Commissioning
ID	Identifier	Identification
IE	Industrial Ethernet	Industrial Ethernet
IEC	International Electrotechnical Commission	International Electrotechnical Commission
IF	Interface	Interface
IGBT	Insulated Gate Bipolar Transistor	Bipolar transistor with insulated control electrode
IGCT	Integrated Gate-Controlled Thyristor	Semiconductor power switch with integrated control electrode
IL	Impulslöschung	Pulse suppression
IP	Internet Protocol	Internet protocol
IPO	Interpolator	Interpolator
IT	Isolé Terre	Non-grounded three-phase line supply
IVP	Internal Voltage Protection	Internal voltage protection
<b>J</b>		
JOG	Jogging	Jogging
<b>K</b>		
KDV	Kreuzweiser Datenvergleich	Data cross-check
KHP	Know-How Protection	Know-how protection
KIP	Kinetische Pufferung	Kinetic buffering
Kp	-	Proportional gain
KTY	-	Special temperature sensor
<b>L</b>		
L	-	Symbol for inductance
LED	Light Emitting Diode	Light-emitting diode
LIN	Linear motor	Linear motor
LR	Lageregler	Position controller
LSB	Least Significant Bit	Least significant bit
LSC	Line-Side Converter	Line-side converter

<b>Abbreviation</b>	<b>Source of abbreviation</b>	<b>Meaning</b>
LSS	Line-Side Switch	Line-side switch
LU	Length Unit	Length unit
LWL	Lichtwellenleiter	Fiber-optic cables
<b>M</b>		
M	-	Symbol for torque
M	Mass	Reference potential for all signal and operating voltages, usually defined as 0 V (also referred to as GND)
MB	Megabyte	Megabyte
MCC	Motion Control Chart	Motion Control Chart
MDI	Manual Data Input	Manual data input
MDS	Motor Data Set	Motor data set
MLFB	Maschinenlesbare Fabrikatebezeichnung	Machine-readable product code
MM	Motor Module	Motor Module
MMC	Man-Machine Communication	Man-machine communication
MMC	Micro Memory Card	Micro memory card
MSB	Most Significant Bit	Most significant bit
MSC	Motor-Side Converter	Motor-side converter
MSCY_C1	Master Slave Cycle Class 1	Cyclic communication between master (class 1) and slave
MSR	Motorstromrichter	Motor-side converter
MT	Messtaster	Probe
<b>N</b>		
N. C.	Not Connected	Not connected
N...	No Report	No report or internal message
NAMUR	Normenarbeitsgemeinschaft für Mess- und Regeltechnik in der chemischen Industrie	Standardization association for measurement and control in chemical industries
NC	Normally Closed (contact)	NC contact
NC	Numerical Control	Numerical control
NEMA	National Electrical Manufacturers Association	Standardization body in the US
NM	Nullmarke	Zero mark
NO	Normally Open (contact)	NO contact
NSR	Netzstromrichter	Line-side converter
NVRAM	Non-Volatile Random Access Memory	Non-volatile read/write memory
<b>O</b>		
OA	Open Architecture	Software component (technology package) which provides additional functions for the SINAMICS drive system
OAIF	Open Architecture Interface	Version of the SINAMICS firmware from which the OA-application can be used
OASP	Open Architecture Support Package	Expands the STARTER commissioning tool by the corresponding OA-application
OC	Operating Condition	Operating condition
OEM	Original Equipment Manufacturer	Original equipment manufacturer

<b>Abbreviation</b>	<b>Source of abbreviation</b>	<b>Meaning</b>
OLP	Optical Link Plug	Bus connector for fiber-optic cable
OMI	Option Module Interface	Option Module Interface
<b>P</b>		
p...	-	Setting parameters
P1	Processor 1	CPU 1
P2	Processor 2	CPU 2
PB	PROFIBUS	PROFIBUS
PcCtrl	PC Control	Master control
PD	PROFIdrive	PROFIdrive
PDS	Power unit Data Set	Power unit data set
PE	Protective Earth	Protective ground
PELV	Protective Extra-Low Voltage	Safety extra-low voltage
PEM	Permanenterregter Synchronmotor	Permanent-magnet synchronous motor
PG	Programmiergerät	Programming device
PI	Proportional Integral	Proportional integral
PID	Proportional Integral Differential	Proportional integral differential
PLC	Programmable Logic Controller	Programmable logic controller
PLL	Phase-Locked Loop	Phase-locked loop
PM	Power Module	Power Module
PN	PROFINET	PROFINET
PNO	PROFIBUS Nutzerorganisation	PROFIBUS user organization
PPI	Point-to-Point Interface	Point-to-point interface
PRBS	Pseudo Random Binary Signal	White noise
PROFIBUS	Process Field Bus	Serial data bus
PS	Power Supply	Power supply
PSA	Power Stack Adapter	Power Stack Adapter
PTC	Positive Temperature Coefficient	Positive temperature coefficient
PTP	Point-To-Point	Point-to-point
PWM	Pulse Width Modulation	Pulse width modulation
PZD	Prozessdaten	Process data
<b>Q</b>		
<b>R</b>		
r ...	-	Display parameters (read only)
RAM	Random Access Memory	Read/write memory
RCCB	Residual Current Circuit Breaker	Residual current operated circuit breaker
RCD	Residual Current Device	Residual current operated circuit breaker
RCM	Residual Current Monitor	Residual current monitor
RFG	Ramp-Function Generator	Ramp-function generator
RJ45	Registered Jack 45	Term for an 8-pin socket system for data transmission with shielded or non-shielded multi-wire copper cables
RKA	Rückkühlanlage	Cooling unit
RLM	Renewable Line Module	Renewable Line Module

<b>Abbreviation</b>	<b>Source of abbreviation</b>	<b>Meaning</b>
RO	Read Only	Read only
ROM	Read-Only Memory	Read-only memory
RPDO	Receive Process Data Object	Receive process data object
RS 232	Recommended Standard 232	Interface standard for cable-connected serial data transmission between a sender and receiver (also known as EIA232)
RS485	Recommended Standard 485	Interface standard for a cable-connected differential, parallel, and/or serial bus system (data transmission between a number of senders and receivers, also known as EIA485)
RTC	Real-Time Clock	Real-time clock
RZA	Raumzeigerapproximation	Space vector approximation
<b>S</b>		
S1	-	Continuous duty
S3	-	Intermittent duty
SAM	Safe Acceleration Monitor	Safe acceleration monitoring
SBC	Safe Brake Control	Safe brake control
SBH	Sicherer Betriebshalt	Safe operating stop
SBR	Safe Brake Ramp	Safe brake ramp monitoring
SBT	Safe Brake Test	Safe brake test
SCA	Safe Cam	Safe cam
SD Card	SecureDigital Card	Secure digital memory card
SDI	Safe Direction	Safe motion direction
SE	Sicherer Software-Endschalter	Safe software limit switches
SG	Sicher reduzierte Geschwindigkeit	Safely-limited speed
SGA	Sicherheitsgerichteter Ausgang	Safety-related output
SGE	Sicherheitsgerichteter Eingang	Safety-related input
SH	Sicherer Halt	Safe standstill
SI	Safety Integrated	Safety Integrated
SIL	Safety Integrity Level	Safety integrity level
SLM	Smart Line Module	Smart Line Module
SLP	Safely-Limited Position	Safely limited position
SLS	Safely-Limited Speed	Safely-limited speed
SLVC	Sensorless Vector Control	Vector control without encoder
SM	Sensor Module	Sensor Module
SMC	Sensor Module Cabinet	Sensor Module Cabinet
SME	Sensor Module External	Sensor Module External
SMI	Sensor Module Integrated	SINAMICS Sensor Module Integrated
SMM	Single Motor Module	Single Motor Module
SN	Sicherer Software-Nocken	Safe software cam
SOS	Safe Operating Stop	Safe operating stop
SP	Service Pack	Service pack
SP	Safe Position	Safe position
SPC	Setpoint Channel	Setpoint channel



<b>Abbreviation</b>	<b>Source of abbreviation</b>	<b>Meaning</b>
SPI	Serial Peripheral Interface	Serial peripheral interface
SPS	Speicherprogrammierbare Steuerung	Programmable Logic Controller
SS1	Safe Stop 1	Safe stop 1 (monitored for time and ramp)
SS2	Safe Stop 2	Safe stop 2
SSI	Synchronous Serial Interface	Synchronous serial interface
SSM	Safe Speed Monitor	Safe feedback from speed monitor
SSP	SINAMICS Support Package	SINAMICS support package
STO	Safe Torque Off	Safe torque off
STW	Steuerwort	Control word
<b>T</b>		
TB	Terminal Board	Terminal Board
TIA	Totally Integrated Automation	Totally Integrated Automation
TM	Terminal Module	Terminal Module
TN	Terre Neutre	Grounded three-phase line supply
Tn	-	Integral-action time
TPDO	Transmit Process Data Object	Transmit process data object
TT	Terre Terre	Grounded three-phase line supply
TTL	Transistor-Transistor Logic	Transistor-transistor logic
Tv	-	Derivative action time
<b>U</b>		
UL	Underwriters Laboratories Inc.	Underwriters Laboratories Inc.
UPS	Uninterruptible Power Supply	Uninterruptible power supply
USV	Unterbrechungsfreie Stromversorgung	Uninterruptible power supply
UTC	Universal Time Coordinated	Universal time coordinated
<b>V</b>		
VC	Vector Control	Vector control
Vdc	-	DC-link voltage
VdcN	-	Partial DC-link voltage, negative
VdcP	-	Partial DC-link voltage, positive
VDE	Verband Deutscher Elektrotechniker	Association of German Electrical Engineers
VDI	Verein Deutscher Ingenieure	Association of German Engineers
VPM	Voltage Protection Module	Voltage Protection Module
Vpp	Volt peak to peak	Volt peak-to-peak
VSM	Voltage Sensing Module	Voltage Sensing Module
<b>W</b>		
WEA	Wiedereinschaltautomatik	Automatic restart
WZM	Werkzeugmaschine	Machine tool
<b>X</b>		
XML	Extensible Markup Language	Extensible Markup Language (standard language for Web publishing and document management)

<b>Abbreviation</b>	<b>Source of abbreviation</b>	<b>Meaning</b>
<b>Y</b>		
<b>Z</b>		
ZK	Zwischenkreis	DC link
ZM	Zero Mark	Zero mark
SW	Zustandswort	Status word

# Index

## Numbers

- 1020
  - Explanation of the symbols (part 1), 516
- 1021
  - Explanation of the symbols (part 2), 517
- 1022
  - Explanation of the symbols (part 3), 518
- 1030
  - Handling BICO technology, 519
- 2201
  - Connection overview CU240B-2, 521
- 2202
  - Connection overview CU240E-2, 522
- 2220
  - CU240B-2 digital inputs, electrically isolated (DI 0 ... DI 3), 523
- 2221
  - CU240E-2 digital inputs, electrically isolated (DI 0 ... DI 5), 524
- 2240
  - CU240B-2 digital output (DO 0), 525
- 2242
  - CU240E-2 digital outputs (DO 0 ... DO 2), 526
- 2250
  - CU240B-2 analog input 0 (AI 0), 527
- 2251
  - CU240E-2 analog inputs 0 ... 1 (AI 0 ... AI 1), 528
- 2255
  - CU240B-2 analog inputs as digital inputs (DI 11), 529
- 2256
  - CU240E-2 analog inputs as digital inputs (DI 11 ... DI 12), 530
- 2260
  - CU240B-2 analog output 0 (AO 0), 531
- 2261
  - CU240E-2 analog outputs 0 ... 1 (AO 0 ... AO 1), 532
- 2272
  - Two-wire control, 533
- 2273
  - Three-wire control, 534
- 2381
  - Control commands and interrogation commands, 536
- 2382
  - States, 537
- 2401
  - PROFIdrive / PROFIBUS overview, 539
- 2410
  - PROFIBUS (PB) / PROFINET (PN), addresses and diagnostics, 540
- 2420
  - Telegrams and process data (PZD), 541
- 2440
  - PZD receive signals interconnection, 542
- 2441
  - STW1 control word interconnection (p2038 = 2), 543
- 2442
  - STW1 control word interconnection (p2038 = 0), 544
- 2446
  - STW3 control word interconnection, 545
- 2450
  - PZD send signals interconnection, 546
- 2451
  - ZSW1 status word interconnection (p2038 = 2), 547
- 2452
  - ZSW1 status word interconnection (p2038 = 0), 548
- 2456
  - ZSW3 status word interconnection, 549
- 2468
  - Receive telegram, free interconnection via BICO (p0922 = 999), 550
- 2470
  - Send telegram, free interconnection via BICO (p0922 = 999), 551
- 2472
  - Status words, free interconnection, 552
- 2501
  - Control word, sequence control, 561
- 2503
  - Status word, sequence control, 562
- 2505
  - Control word, setpoint channel, 563
- 2510
  - Status word 1 (r0052), 564
- 2511
  - Status word 2 (r0053), 565
- 2512
  - Control word 1 (r0054), 566
- 2513
  - Control word 2 (r0055), 567
- 2520
  - Control word, speed controller, 568

- 2522
  - Status word, speed controller, 569
- 2526
  - Status word, closed-loop control, 570
- 2530
  - Status word, closed-loop current control, 571
- 2534
  - Status word, monitoring functions 1, 572
- 2536
  - Status word, monitoring functions 2, 573
- 2537
  - Status word, monitoring functions 3, 574
- 2546
  - Control word, faults/alarms, 575
- 2548
  - Status word, faults/alarms 1 and 2, 576
- 2610
  - Sequence control - Sequencer, 577
- 2634
  - Sequence control - Missing enable signals, 578
- 2701
  - Basic brake control, 580
- 2800
  - Parameter manager, 582
- 2802
  - Monitoring functions and faults/alarms, 583
- 2804
  - Status words, 584
- 2810
  - STO (Safe Torque Off), 585
- 2812
  - F-DI (Fail-safe Digital Input), 586
- 2819
  - SS1 (Safe Stop 1), internal STOP A, B, F, 588
- 2820
  - SLS (Safely-Limited Speed), 589
- 2823
  - SSM (Safe Speed Monitor), 590
- 2824
  - SDI (Safe Direction), 591
- 2840
  - Control and status word, 592
- 2850
  - Fail-safe digital inputs (F-DI 0 ... F-DI 2), 593
- 2855
  - Extended Functions via F-DI (p9601.2 = 1 and p9601.3 = 0), 594
- 2858
  - Extended Functions via PROFIsafe (9601.2 = 1 and 9601.3 = 1), 595
- 2915
  - Standard telegrams, 597
- 2917
  - Manufacturer-specific telegrams, 598
- 3001
  - Overview of setpoint channel, 600
- 3010
  - Fixed speed setpoints, binary selection (p1016 = 2), 601
- 3011
  - Fixed speed setpoints, direct selection (p1016 = 1), 602
- 3020
  - Motorized potentiometer, 603
- 3030
  - Main/supplementary setpoint, setpoint scaling, jogging, 604
- 3040
  - Direction limitation and direction reversal, 605
- 3050
  - Skip frequency bands and speed limitations, 606
- 3060
  - Basic ramp-function generator, 607
- 3070
  - Extended ramp-function generator, 608
- 3080
  - Ramp-function generator selection, -status word, -tracking, 609
- 6020
  - Speed control and generation of the torque limits, overview, 611
- 6030
  - Speed setpoint, droop, 612
- 6031
  - Pre-control balancing, acceleration model, 613
- 6040
  - Speed controller, 614
- 6050
  - Kp\_n-/Tn\_n adaptation, 615
- 6060
  - Torque setpoint, 616
- 6220
  - Vdc\_max controller and Vdc\_min controller (vector control, PM230/PM240), 617
- 6300
  - U/f control, overview, 618
- 6301
  - U/f characteristic and voltage boost, 619
- 6310
  - Resonance damping and slip compensation, 620
- 6320
  - Vdc\_max controller and Vdc\_min controller (PM230/PM240), (U/f), 621
- 6490
  - Speed control configuration, 622
- 6491
  - Flux controller configuration, 623
- 6630
  - Upper/lower torque limit, 624

- 6640
  - Current/power/torque limits, 625
- 6700
  - Current control, overview, 626
- 6710
  - Current setpoint filter, 627
- 6714
  - Iq and Id controllers, 628
- 6721
  - Id setpoint (PEM, p0300 = 2), 629
- 6722
  - Field weakening characteristic, Id setpoint (ASM, p0300 = 1), 630
- 6723
  - Field weakening controller, flux controller (ASM, p0300 = 1), 631
- 6724
  - Field weakening controller (PEM, p0300 = 2), 632
- 6730
  - Interface to the Power Module (ASM, p0300 = 1), 633
- 6731
  - Interface to the Power Module (PEM, p0300 = 2xx), 634
- 6799
  - Display signals, 635
- 7017
  - DC brake (p0300 = 1), 637
- 7200
  - Sampling times of the runtime groups, 639
- 7210
  - AND (AND function blocks with 4 inputs), 640
- 7212
  - OR (OR function blocks with 4 inputs), 641
- 7214
  - XOR (XOR function blocks with 4 inputs), 642
- 7216
  - NOT (inverter), 643
- 7220
  - ADD (adder with 4 inputs),  
SUB (subtractor), 644
- 7222
  - MUL (multiplier),  
DIV (divider), 645
- 7224
  - AVA (absolute value generator), 646
- 7225
  - NCM (numeric comparator), 647
- 7226
  - PLI (polyline scaling), 648
- 7230
  - MFP (pulse generator),  
PCL (pulse contractor), 649
- 7232
  - PDE (ON delay), 650
- 7233
  - PDF (OFF delay), 651
- 7234
  - PST (pulse stretcher), 652
- 7240
  - RSR (RS flip-flop),  
DFR (D flip-flop), 653
- 7250
  - BSW (binary change-over switch),  
NSW (numeric change-over switch), 654
- 7260
  - LIM (limiter), 655
- 7262
  - PT1 (smoothing element), 656
- 7264
  - INT (integrator),  
DIF (derivative-action element), 657
- 7270
  - LVM (double-sided limit monitor with hysteresis), 658
- 7950
  - Fixed value selection binary (p2216 = 2), 660
- 7951
  - Fixed value selection direct (p2216 = 1), 661
- 7954
  - Motorized potentiometer, 662
- 7958
  - Control, 663
- 8005
  - Overview, signals and monitoring functions, 665
- 8010
  - Speed signals 1, 666
- 8011
  - Speed signals 2, 667
- 8012
  - Torque signals, motor blocked/stalled, 668
- 8013
  - Load monitoring, 669
- 8014
  - Thermal monitoring, power unit, 670
- 8016
  - Thermal monitoring, motor, 671
- 8017
  - Thermal motor models, 672
- 8020
  - Monitoring functions 1, 673
- 8021
  - Monitoring functions 2, 674
- 8050
  - Diagnostics overview, 676
- 8060
  - Fault buffer, 677
- 8065
  - Alarm buffer, 678

- 8070
  - Faults/alarms trigger word (r2129), 679
- 8075
  - Faults/alarms configuration, 680
- 8560
  - Command Data Sets (CDS), 682
- 8565
  - Drive Data Sets (DDS), 683
- 9310
  - Configuration, addresses and diagnostics, 554
- 9342
  - STW1 control word interconnection, 555
- 9352
  - ZSW1 status word interconnection, 556
- 9360
  - Receive telegram, free interconnection via BICO (p0922 = 999), 557
- 9370
  - Send telegram, free interconnection via BICO (p0922 = 999), 558
- 9372
  - Status words, free interconnection, 559

**A**

- Acknowledgement
  - Adjustable, 694
  - Default, 694
  - IMMEDIATELY, 689
  - POWER ON, 689
  - PULSE INHIBIT, 689
- Adjustable parameters, 13
- Alarm
  - Cause, 694
  - Display, 686
  - Explanation of list, 690
  - Fault location, 691
  - General information, 686
  - How to distinguish an alarm from a fault, 686
  - List of all alarms, 697
  - Message class, 691
  - Name, 691
  - Number, 690
  - Number range, 695
  - Remedy, 694
- Alarm buffer, 675
- Alarm value, 694
- Analog inputs, 520
- Analog outputs, 520
- ASCII table, 814
- Axxxx, 690

**B**

- BI, Binector Input, 14
- BICO technology, 519
- Binector
  - Input (BI), 14
  - Output (BO), 14
- Bit field (parameter), 21
- BO, Binector Output, 14
- Brake control, 579

**C**

- Calculated, 15
- Can be changed (parameters), 17
- CDS, (Command Data Set), 18, 681, 682
- CI, Connector Input, 14
- CO, Connector Output, 14
- CO/BO, Connector/Binector Output, 14
- Command data sets, 681
- Connector
  - Input (CI), 14
  - Output (CO), 14
- Control
  - Technology controller, 663
  - Vector, 610
- Control words, 535, 538
- converter
  - Binector/connector, 552
  - Connector/binector, 550
- Cxxxxx, 690

**D**

- Data Set, 681
  - Command data set, CDS, 18
  - Drive Data Set, DDS, 18
  - Encoder Data Set, EDS, 18
  - Motor Data Set, MDS, 18
  - Power unit Data Set, PDS, 18
- Data set, 681
  - Command data set, 18
  - Drive data set, 18
  - Encoder data set, 18
  - Motor data set, 18
  - Power unit data set, 18
- Data type (parameters), 16
- DC brake (p0300 = 1), 637
- DCBRAKE, 688
- DDS, (Drive Data Set), 681, 683
- DDS, drive data set, 18
- Dependency (parameter), 21
- Description (parameter), 20
- Digital inputs, 520
- Digital outputs, 520
- Direction limitation, 596, 599
- Direction reversal, 596, 599

- Directory
  - ASCII table, 814
  - Complete table of contents, 5
  - Index, 827
  - List of abbreviations, 818
  - Table of contents, function diagrams, 510
- Display
  - Alarms, 686
  - Faults, 686
- Display parameters, 13
- Drive data sets, 681
- Dynamic index (parameters), 18
- E**
- EDS, (Encoder Data Set), 18
- ENCODER, 688
- F**
- Factory setting, 20
- Fault
  - Acknowledgement, 689, 694
  - Cause, 694
  - Display, 686
  - Explanation of list, 690
  - Fault location, 691
  - Fault reaction, 687, 694
  - General information, 686
  - How to distinguish a fault from an alarm, 686
  - List of all faults, 697
  - Message class, 691
  - Name, 691
  - Number, 690
  - Number range, 695
  - Remedy, 694
- Fault buffer, 675
  - Configuration, 677
- Fault value, 694
- Faults/alarms configuration, 675
- Faults/alarms triggering (r2129), 675
- Fixed speed setpoints, 596, 599
- Fixed values, 660, 661
- Free function blocks, 638
- Free interconnection via BICO, 535, 538
- Free interconnection, status words, 552
- Function diagram (parameters), 19
- Function diagrams, brake control
  - Basic brake control, 580
- Function diagrams, data sets
  - Command Data Sets (CDS), 682
  - Drive Data Sets (DDS), 683
- Function diagrams, diagnostics
  - Alarm buffer, 678
  - Fault buffer, 677
  - Faults/alarms configuration, 680
  - Faults/alarms trigger word (r2129), 679
  - Overview, 676
- Function diagrams, fieldbus interface
  - Configuration, addresses and diagnostics, 554
  - Receive telegram, free interconnection via BICO (p0922 = 999), 557
  - Send telegram, free interconnection via BICO (p0922 = 999), 558
  - Status words, free interconnection, 559
  - STW1 control word interconnection, 555
  - ZSW1 status word interconnection, 556
- Function diagrams, free function blocks
  - ADD (adder), 644
  - AND, 640
  - AVA (absolute value generator), 646
  - BSW (binary switch), 654
  - DFR (D flip-flop), 653
  - DIF (derivative-action element), 657
  - DIV (divider), 645
  - INT (integrator), 657
  - LIM (limiter), 655
  - LVM (double-sided limit monitor with hysteresis), 658
  - MFP (pulse generator), 649
  - MUL (multiplier), 645
  - NCM (numeric comparator), 647
  - NOT (inverter), 643
  - NSW (numeric change-over switch), 654
  - OR, 641
  - PCL (pulse contractor), 649
  - PDE (ON delay), 650
  - PDF (OFF delay), 651
  - PLI (polyline scaling), 648
  - PST (pulse stretcher), 652
  - PT1 (smoothing element), 656
  - RSR (RS flip-flop), 653
  - Sampling times of the runtime groups, 639
  - SUB (subtractor), 644
  - XOR (exclusive OR), 642
- Function diagrams, general information
  - Explanation of the symbols (part 1), 516
  - Explanation of the symbols (part 2), 517
  - Explanation of the symbols (part 3), 518
  - Handling BICO technology, 519
- Function diagrams, input/output terminals
  - Connection overview CU240B-2, 521
  - Connection overview CU240E-2, 522
  - CU240B-2 analog input 0 (AI 0), 527
  - CU240B-2 analog inputs as digital inputs (DI 11), 529
  - CU240B-2 analog output (AO 0), 531
  - CU240B-2 digital inputs, electrically isolated (DI 0 ... DI 3), 523
  - CU240B-2 digital output (DO 0), 525
  - CU240E-2 analog inputs as digital inputs (DI 11 ... DI 12), 530

- CU240E-2 analog inputs 0 ... 1 (AI 0 ... AI 1), 528
- CU240E-2 analog outputs 0 ... 1 (AO 0 ... AO 1), 532
- CU240E-2 digital inputs, electrically isolated (DI 0 ... DI 5), 524
- CU240E-2 digital outputs (DO 0 ... DO 2), 526
- Three-wire control, 534
- Two-wire control, 533
- Function diagrams, internal control/status words
  - Control word 1 (r0054), 566
  - Control word 2 (r0055), 567
  - Control word, faults/alarms, 575
  - Control word, sequence control, 561
  - Control word, setpoint channel, 563
  - Control word, speed controller, 568
  - Sequence control - Missing enable signals, 578
  - Sequence control - Sequencer, 577
  - Status word 1 (r0052), 564
  - Status word 2 (r0053), 565
  - Status word, closed-loop control, 570
  - Status word, closed-loop current control, 571
  - Status word, faults/alarms 1 and 2, 576
  - Status word, monitoring functions 1, 572
  - Status word, monitoring functions 2, 573
  - Status word, monitoring functions 3, 574
  - Status word, sequence control, 562
  - Status word, speed controller, 569
- Function diagrams, PROFIdrive
  - Overview, 539
  - PROFIBUS (PB) / PROFINET (PN), addresses and diagnostics, 540
  - PZD receive signals interconnection, 542
  - PZD send signals interconnection, 546
  - Receive telegram, free interconnection via BICO (p0922 = 999), 550
  - Send telegram, free interconnection via BICO (p0922 = 999), 551
  - Status words, free interconnection, 552
  - STW1 control word interconnection (p2038 = 0), 544
  - STW1 control word interconnection (p2038 = 2), 543
  - STW3 control word interconnection, 545
  - Telegrams and process data (PZD), 541
  - ZSW1 status word interconnection (p2038 = 0), 548
  - ZSW1 status word interconnection (p2038 = 2), 547
  - ZSW3 status word interconnection, 549
- Function diagrams, PROFInergy
  - Control commands and interrogation commands, 536
  - States, 537
- Function diagrams, Safety Integrated Basic Functions
  - F-DI (Fail-safe Digital Input), 586
  - Monitoring functions and faults/alarms, 583
  - Parameter manager, 582
  - Status words, 584
  - STO (Safe Torque Off), 585
- Function diagrams, Safety Integrated Extended Functions
  - Control and status word, 592
  - Extended Functions via F-DI (p9601.2 = 1 and p9601.3 = 0), 594
  - Extended Functions via PROFIsafe (9601.2 = 1 and 9601.3 = 1), 595
  - Fail-safe digital inputs (F-DI 0 ... F-DI 2), 593
  - SDI (Safe Direction), 591
  - SLS (Safely-Limited Speed), 589
  - SS1 (Safe Stop 1), internal STOP A, B, F, 588
  - SSM (Safe Speed Monitor), 590
- Function diagrams, Safety Integrated PROFIsafe
  - Manufacturer-specific telegrams, 598
  - Standard telegrams, 597
- Function diagrams, setpoint channel
  - Direction limitation and direction reversal, 605
  - Fixed speed setpoints, binary selection (p1016 = 2), 601
  - Fixed speed setpoints, direct selection (p1016 = 1), 602
  - Main/supplementary setpoint, setpoint scaling, jogging, 604
  - Motorized potentiometer, 603
  - Overview, 600
  - Ramp-function generator (basic), 607
  - Ramp-function generator (extended), 608
  - Ramp-function generator selection, -status word, -tracking, 609
  - Skip frequency bands and speed limitations, 606
- Function diagrams, signals and monitoring functions
  - Load monitoring, 669
  - Monitoring functions 1, 673
  - Monitoring functions 2, 674
  - Overview, 665
  - Speed signals 1, 666
  - Speed signals 2, 667
  - Thermal monitoring, motor, 671
  - Thermal monitoring, power unit, 670
  - Thermal motor models, 672
  - Torque signals, motor blocked/stalled, 668
- Function diagrams, technology controller
  - Control, 663
  - Fixed value selection binary (p2216 = 2), 660
  - Fixed value selection direct (p2216 = 1), 661
  - Motorized potentiometer, 662
- Function diagrams, technology functions
  - DC brake, 637
- Function diagrams, vector control
  - Current control, overview, 626
  - Current setpoint filter, 627
  - Current/power/torque limits, 625
  - Display signals, 635
  - Field weakening characteristic, Id setpoint (ASM, p0300 = 1), 630



- Field weakening controller (PEM, p0300 = 2), 632
- Field weakening controller, flux controller (ASM, p0300 = 1), 631
- Flux controller configuration, 623
- Id setpoint (PEM, p0300 = 2), 629
- Interface to the Power Module (ASM, p0300 = 1), 633
- Interface to the Power Module (PEM, p0300 = 2xx), 634
- Iq and Id controllers, 628
- Kp\_n-/Tn\_n adaptation, 615
- Pre-control balancing, acceleration model, 613
- Resonance damping and slip compensation (U/f), 620
- Speed control and generation of the torque limits, overview, 611
- Speed control configuration, 622
- Speed controller, 614
- Speed setpoint, droop, 612
- Torque setpoint, 616
- U/f characteristic and voltage boost, 619
- U/f control, overview, 618
- Upper/lower torque limit, 624
- Vdc\_max controller and Vdc\_min controller (PM230/PM240), 621
- Vdc\_max controller and Vdc\_min controller (vector control, PM230/PM240), 617
- Fxxxx, 690
- G**
- General information
  - about parameters, 12
  - on faults and alarms, 686
  - on function diagrams, 515
- I**
- IASC, 688
- Index
  - Parameters, 13
- Index (parameters), 20
- Industrial security, 9
- Input/output terminals, 520
  - Analog inputs, 520
  - Digital inputs, 520
- Internal control words, 560
- Internal control/status words, 560
- J**
- Jogging, 596, 599, 604
- L**
- Linked parameters, 13
- List
  - Abbreviations, 818
  - ASCII table, 814
- Binector inputs (BI parameters), 494
- Binector outputs (BO parameters), 498
- Command data sets, 484
- Connector inputs (CI parameters), 496
- Connector outputs (CO parameters), 499
- Connector/binector outputs (CO/BO parameters), 502
- Drive data sets, 486
- Encoder data sets, 493
- Faults and alarms, 697
- Message ranges, 695
- Motor data sets, 491
- Parameter ranges, 22
- Parameters for quick commissioning, 506
- Parameters for write protection and know-how protection, 504
- Parameters, all, 25
- Power unit data sets, 493
- List of abbreviations, 818
- Load monitoring, 664
- M**
- Manufacturer-specific telegrams, 541
- MDS (Motor Data Set), 18
- Message buffer, 675
- Message class, 691
- Monitoring functions, 664
- Motorized potentiometer, 596, 599, 662
- N**
- Name
  - Alarm, 691
  - Fault, 691
- Number
  - Alarm, 690
  - Fault, 690
  - Parameters, 13
- Number range
  - Alarms, 695
  - Faults, 695
  - Parameters, 22
- O**
- OFF1, 687
- OFF1\_DELAYED, 687
- OFF2, 687
- OFF3, 688
- P**
- Parameters
  - Access level, 15
  - Bit field, 21
  - Calculated, 15
  - Can be changed, 17
  - Command data sets, 484

- Data type, 16
- Dependency, 21
- Description, 20
- Drive data sets, 486
- Dynamic index, 18
- Encoder data sets, 493
- Full name, 14
- Function diagram, 19
- Index, 13, 20
- Linked parameters, 13
- List for quick commissioning, 506
- List of all parameters, 25
- List of the binector inputs, 494
- List of the binector outputs, 498
- List of the connector inputs, 496
- List of the connector outputs, 499
- List of the connector/binector outputs, 502
- Motor data sets, 491
- Number, 13
- Number range, 22
- Parameter values, 20
- Power unit data sets, 493
- Recommendation, 20
- Safety guidelines, 21
- Scaling, 17
- Short name, 14
- Unit group, 18
- Unit selection, 18
- Values, 20
- Password for access level 4, 15
- PDS, (Power unit Data Set), 18
- Process data, 535, 538
- PROFIBUS, 535, 538
- PROFIdrive, 535, 538
- PROFINET, 535, 538
- pxxxx, 13

## Q

- Quick commissioning (parameters), 506

## R

- Ramp-function generator, 596, 599
- Reaction to faults, 687
- Resetting faults, 694
- rxxxx, 13

## S

- Safety instructions
  - Fundamental, 7
  - General, 8
  - Industrial security, 9
- Safety instructions (parameter), 21
- Safety Integrated
  - Basic Functions, 581, 587
  - Extended Functions, 581, 587
- Safety Integrated PROFIsafe, 596
- Scaling, 17
- Setpoint channel, 596, 599
- Signals, 664
- Skip frequency bands, 596, 599
- Speed control
  - Vector, 610
- Speed signals, 664
- Standard telegrams, 541
- Status words, 535, 538
  - Internal, 560
- STOP2, 688

## T

- Technology controller, 659
- Technology functions, 636
- Telegrams, 535, 538
- Temperature evaluation, 520
- Thermal monitoring, 664
- Torque signals, 664

## U

- Unit (parameter), 18

## V

- Values (parameter), 20
- Vector control
  - Current setpoint filter, 627
  - Droop, 612
  - Iq and Id controllers, 628
  - Kp\_n-/Tn\_n adaptation, 615
  - Speed control configuration, 622
  - Speed controller, 614
  - Table of contents, 610
  - Torque setpoint, 616
- Version
  - List of all parameters, 25
  - List of faults and alarms, 697



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