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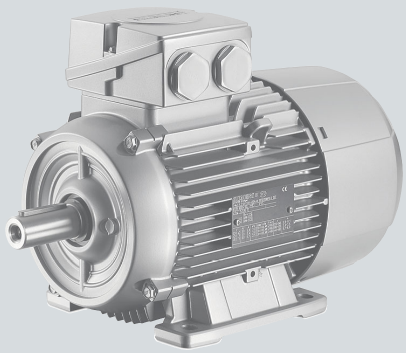

List Manual

SINAMICS

SINAMICS G120

CU230P-2 Control Units

Edition 04/2018

www.siemens.com/drives

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SINAMICS

SINAMICS G120
CU230P-2 Control Units

List Manual

Valid for

Control Units	Firmware version
CU230P-2_HVAC	4.7 SP10
CU230P-2_BT	4.7 SP10
CU230P-2_DP	4.7 SP10
CU230P-2_PN	4.7 SP10
CU230P-2_CAN	4.7 SP10

04/2018
A5E33838102

Legal information

Warning concept

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

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

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

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

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

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

Qualified personnel

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

Proper use of Siemens products

Note the following:

⚠ **WARNING**
Siemens products are only permitted to be used for the applications envisaged in the catalog and in the associated technical documentation. If third-party products and components are to be used, they must be recommended or approved by Siemens. 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. Information in the associated documentation must be observed.

Trademarks

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

Disclaimer of liability

We have verified that the contents of this document correspond to 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.

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Table of contents

1 Fundamental safety instructions

Content

1.1 General safety instructions

WARNING

Danger to life if the safety instructions and residual risks are not observed

If the safety instructions and residual risks in the associated hardware documentation are not observed, accidents involving severe injuries or death can occur.

- Observe the safety instructions given in the hardware documentation.
- Consider the residual risks for the risk evaluation.

WARNING

Malfunctions of the machine as a result of incorrect or changed parameter settings

As a result of incorrect or changed parameterization, machines can malfunction, which in turn can lead to injuries or death.

- Protect the parameterization (parameter assignments) against unauthorized access.
- Handle possible malfunctions by taking suitable measures, e.g. emergency stop or emergency off.

1.2 Warranty and liability for application examples

The application examples are not binding and do not claim to be complete regarding configuration, equipment or any eventuality which may arise. The application examples do not represent specific customer solutions, but are only intended to provide support for typical tasks. You are responsible for the proper operation of the described products. These application examples do not relieve you of your responsibility for safe handling when using, installing, operating and maintaining the equipment.

1.3 Industrial security

Note

Industrial security

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens products and solutions only represent one component of such a concept.

The customer is responsible for preventing unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit:

Industrial security (http://www.siemens.com/industrialsecurity).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed at:

Industrial security (http://www.siemens.com/industrialsecurity).

WARNING

Unsafe operating states resulting from software manipulation

Software manipulations (e.g. viruses, trojans, malware or worms) can cause unsafe operating states in your system that may lead to death, serious injury, and property damage.

- Keep the software up to date.
- Incorporate the automation and drive components into a holistic, state-of-the-art industrial security concept for the installation or machine.
- Make sure that you include all installed products into the holistic industrial security concept.
- Protect files stored on exchangeable storage media from malicious software by with suitable protection measures, e.g. virus scanners.

Parameters 2

Content

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 have 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 26)" has the following structure:

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

pxxxx[0...n]	**BICO: Full parameter name / abbreviated name**		
CU/PM variants	**Access level:** 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
	Can be changed: C(x), U, T	**Scaling:** p2002	**Dyn. index:** CDS, p0170
	Unit group: 6_2	**Unit selection:** p0505	**Function diagram:** 8070
	Min	**Max**	**Factory setting**
	0.00 [Nm]	10.00 [Nm]	0.00 [Nm]

Description: Text

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

Recommendation: Text

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

Bit array:

Bit	Signal name	1 signal	0 signal	FP
00	Name and meaning of bit 0	Yes	No	8060
01	Name and meaning of bit 1	Yes	No	-
02	Name and meaning of bit 2	Yes	No	8052
	etc.			

Dependency: Text
See also: pxxxx, rxxxx
See also: Fxxxxx, Axxxxx

Danger: ⚠ **Warning:** ⚠ **Caution:** ⚠ Safety notices with a warning triangle

Notice: Safety notice without a warning triangle

Note: 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)
- 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 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
- Setting component lists

  p0230, p0300, p0301, p0400
- Automatically calculating and pre-assigning

  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 parentheses.

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 Connector Input)
  This parameter selects 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.
CU230P-2_BT	CU230P-2 (exclusively for Siemens IC BT)
CU230P-2_CAN	CU230P-2 with CAN interface
CU230P-2_DP	CU230P-2 with PROFIBUS interface
CU230P-2_HVAC	CU230P-2 with RS485 interface for USS, Modbus and BACnet
CU230P-2_PN	CU230P-2 with PROFINET interface
PM230	Power Module for pumps and fans (3 AC 400 V)

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

CU/PM variants	Meaning
PM240	Power Module for standard applications with dynamic braking **PM240** 3 AC 400 V **PM240-2** 1 AC / 3 AC 230 V; 3 AC 400 V; 3 AC 690 V **PM240P-2** 3 AC 400 V; 3 AC 690 V
PM250	Power Module (3 AC 400 V with energy recovery)
PM260	Power Module (3 AC 690 V with energy recovery)
PM330	Power Module for pumps and fans (3 AC 400 V; 3 AC 690 V)

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 input parameter			
	CI parameter			**BI parameter**
BICO output 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	–
Legend: x:	x: BICO interconnection permitted			
–:	–: BICO interconnection not permitted			
rxxxx:	BICO interconnection is only permitted for the specified CO parameters			

Table 2-2 Possible combinations of BICO interconnections, continued

	BICO input parameter			
	CI parameter			BI parameter
BICO output parameter	**Unsigned32 / Integer16**	**Unsigned32 / Integer32**	**Unsigned32 / FloatingPoint32**	**Unsigned32 / Binary**
BO: Unsigned8	–	–	–	x
BO: Unsigned16	–	–	–	x
BO: Unsigned32	–	–	–	x
BO: Integer16	–	–	–	x
BO: Integer32	–	–	–	x
BO: FloatingPoint32	–	–	–	–
Legend: x:	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. One or more states are possible.

The following states are available:

- C(x) Commissioning C: **C**ommissioning

  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: R**u**n

  Pulses are enabled.

- T Ready T: Ready **t**o run

  The pulses are not enabled and the status "C(x)" is not active.

Normalization

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

The following reference variables are available:

- p2000 … p2007: Reference speed, reference voltage, etc.
- PERCENT: 1.0 = 100 %
- 4000H: 4000 hex = 100 % (wort) or 4000 0000 hex = 100 % (double word)
- p0514: specific normalization

  Refer to the description for p0514[0…9] and p0515[0…19] to p0524[0…19]

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)
- "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 CU230P-2 HVAC, CU230P-2 DP, CU230P-2 CAN Control Units.

Unit group and unit selection

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

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 switched over.

Example:

Unit group: 7_1, unit selection: p0505

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

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

Table 2-3 Unit group (p0100)

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

Table 2-4 Unit group (p0505)

Unit group	Unit Choice 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^2	%	1/s^2	%	p2007

Table 2-5 Unit group (p0595)

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

Table 2-6 Unit group (p11026)

Unit group	Unit selection for p11026 =		Reference variable for %
	Value	Units	
9_2	The values that can be set and the technological units are shown in p11026.		

Table 2-7 Unit group (p11126)

Unit group	Unit selection for p11126 =		Reference variable for %
	Value	Units	
9_3	The values that can be set and the technological units are shown in p11126.		

Table 2-8 Unit group (p11226)

Unit group	Unit selection for p11226 =		Reference variable for %
	Value	Units	
9_4	The values that can be set and the technological units are shown in p11226.		

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) of indexed adjustable parameters:

- Min, Max:

  The adjustment range and unit apply to all indices.

- Factory setting:

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

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

Bit field

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

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

  The signal is shown on this function diagram.

Dependency

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

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 26)".

Parameters are grouped into the following number ranges:

Table 2-9 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 2-9 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	PROFIenergy
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 2-9 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, Version: 4711200, Language: eng
Objects: CU230P-2_HVAC, CU230P-2_DP, CU230P-2_CAN, CU230P-2_PN, CU230P-2_BT

r0002 Drive operating display / Drv op_display

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	200	-

Description: Operating display for the drive.

Value:
0: Operation - everything enabled
10: Operation - set "enable setpoint" = "1" (p1142)
12: Operation - RFG frozen, set "RFG start" = "1" (p1141)
13: Operation - set "enable RFG" = "1" (p1140)
14: Operation - MotID, excitation running
16: Operation - withdraw braking with OFF1 using "ON/OFF1" = "1"
17: Operation - braking with OFF3 can only be interrupted with OFF2
18: Operation - brake on fault, remove fault, acknowledge
19: Operation - DC braking active (p1230, p1231)
21: Ready for operation - set "Enable operation" = "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)
44: Switching on inhibited - supply STO terminal w/ 24 V (hardware)
45: Switching on inhibited - remove fault, acknowledge fault
46: Switching on inhibited - exit commissioning mode (p0010)
70: Initialization
200: Wait for booting/partial booting

Dependency: Refer to: r0046

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

Note: OC: Operating condition

RFG: Ramp-function generator

COMM: Commissioning

MotID: Motor data identification

p0003 Access level / Acc_level

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C, U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
3	4	3

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

Value:
3: Expert
4: Service

Note: 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).

p0010 Drive commissioning parameter filter / Drv comm. par_filt

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2800, 2818
Min	**Max**	**Factory setting**
0	49	1

Description: Sets the parameter filter to commission a drive.

Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

Value:
0: Ready
1: Quick commissioning
2: Power unit commissioning
3: Motor commissioning
5: Technological application/units
15: Data sets
29: Only Siemens internal
30: Parameter reset
39: Only Siemens internal
49: Only Siemens internal

Dependency: Refer to: r3996

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

Note: The drive can only be switched on 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!

p0015 Macro drive unit / Macro drv unit

CU230P-2_DP
CU230P-2_PN

Access level: 1	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C, C(1)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	999999	7

Description: Runs the corresponding macro files.

Dependency: Refer to: p1000, r8570

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.

p0015 Macro drive unit / Macro drv unit

CU230P-2_HVAC
CU230P-2_CAN
CU230P-2_BT

Access level: 1	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C, C(1)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	999999	12

Description: Runs the corresponding macro files.

Dependency: Refer to: p1000, r8570

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.

r0018 Control Unit firmware version / Firmware version

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

r0020 Speed setpoint smoothed / Speed setpoint

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 5020, 6799
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

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

Dependency: Refer to: r0060

Note: Smoothing time constant = 100 ms

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

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

r0021 CO: Actual speed smoothed / Actual speed

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 6799
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the calculated and smoothed rotor speed.

Frequency components from the slip compensation (for induction motors) are not included.

Dependency: Refer to: r0022, r0063

Note: Smoothing time constant = 100 ms

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

The speed actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).

r0022 Actual speed rpm smoothed / Actual speed

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6799
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the calculated and smoothed rotor speed.

Frequency components from the slip compensation (for induction motors) are not included.

r0022 is identical to r0021, however, it always has units of rpm and contrary to r0021 cannot be changed over.

Dependency: Refer to: r0021, r0063

Note: Smoothing time constant = 100 ms

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

The speed actual value is available smoothed (r0021, r0022) and unsmoothed (r0063).

r0024 Output frequency smoothed / Output frequency

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6799
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the smoothed output frequency.

Frequency components from the slip compensation (for induction motors) are included.

Dependency: Refer to: r0066

Note: Smoothing time constant = 100 ms

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

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

r0025 CO: Output voltage smoothed / Output voltage

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 5730, 6300, 6799
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

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

Dependency: Refer to: r0072

Note: Smoothing time constant = 100 ms

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

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

r0026 CO: DC link voltage smoothed / DC link voltage

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6799
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

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

Dependency: Refer to: r0070

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

Note: Smoothing time constant = 100 ms

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

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

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

r0027 CO: Absolute actual current smoothed / Motor current

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 5730, 6799, 8850, 8950
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the smoothed absolute actual current value.

Dependency: Refer to: r0068

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

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

r0028 Modulation depth smoothed / Mod_depth smth

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

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

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6799
Min	**Max**	**Factory setting**
- [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

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6799
Min	**Max**	**Factory setting**
- [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 / Actual torque

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Dyn. index:** -
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 5730, 6799
Min	**Max**	**Factory setting**
- [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).

r0032 CO: Active power actual value smoothed / Power

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** r2004	**Dyn. index:** -
Unit group: 14_10	**Unit selection:** p0505	**Func. diagram:** 5730, 6799, 8750, 8850, 8950
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

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

Dependency: Refer to: r0082

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

Note: Power delivered at the motor shaft.

The active power is available smoothed (r0032 with 100 ms) and unsmoothed (r0082).

r0034 CO: Motor utilization thermal / Mot_util therm

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8017
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the motor utilization from motor temperature model 1 (I2t).

For firmware version < 4.7 SP6 or p0612.12 = 0:

- r0034 = (motor model temperature - 40 K) / (p0605 - 40 K) * 100 %

From firmware version 4.7 SP6 and p0612.12 = 1:

- r0034 = (motor model temperature - p0613) / (p0605 - p0613) * 100 %

Dependency: The thermal motor utilization is only determined when the motor temperature model 1 (I2t) is activated.

The following conditions are a prerequisite for additional information.

- a temperature sensor has not been parameterized (p0600, p0601).
- the current corresponds to the stall current (p0318).
- speed n > 1 [rpm].

For firmware version < 4.7 SP6 or p0612.12 = 0, the following applies:

- the temperature model operates with an ambient temperature of 20 °C.

A motor utilization of 100% is displayed (r0034 = 100 %) when the following conditions are permanently fulfilled:

- the ambient temperature is 40 °C (model 1: p0625 = 40 °C, model 3: p0613 = 40 °C).

From firmware version 4.7 SP6 and p0612.12 = 1, the following applies:

- the ambient temperature can be adapted to the conditions using p0613.

Refer to: p0605, p0611, p0612, p0613, p0627, r0632

Refer to: F07011, A07012

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

Note: Smoothing time constant = 100 ms

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

For r0034 = -200.0 %, the following applies:

The value is invalid (e.g. the motor temperature model is not activated or has been incorrectly parameterized).

r0035 CO: Motor temperature / Mot temp

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2006	**Dyn. index:** -
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8016, 8017
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Display and connector output for the actual temperature in the motor.

Note: For r0035 not equal to -200.0 °C, the following applies:

- this temperature display is valid.

- a KTY/PT1000 temperature sensor is connected.

- the thermal model for the induction motor is activated (p0612 bit 1 = 1 and temperature sensor deactivated: p0600 = 0 or p0601 = 0).

For r0035 equal to -200.0 °C, the following applies:

- this temperature display is not valid (temperature sensor error).

- a PTC sensor or bimetallic NC contact is connected.

- the temperature sensor of the synchronous motor is deactivated (p0600 = 0 or p0601 = 0).

r0036 CO: Power unit overload I2t / PM overload I2t

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8021
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the power unit overload determined using the I2t calculation.

A current reference value is defined for the I2t monitoring of the power unit. It represents the current that can be conducted by the power unit without any influence of the switching losses (e.g. the continuously permissible current of the capacitors, inductances, busbars, etc.).

If the I2t reference current of the power unit is not exceeded, then an overload (0 %) is not displayed.

In the other case, the degree of thermal overload is calculated, whereby 100% results in a trip.

Dependency: Refer to: p0290, p0294

Refer to: F30005

r0037[0...19] CO: Power unit temperatures / PM temperatures

PM230
PM240
PM250, PM260

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2006	**Dyn. index:** -
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8021
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Display and connector output for the temperature in the power unit.

Index:
[0] = Inverter maximum value
[1] = Depletion layer maximum value
[2] = Rectifier maximum value
[3] = Air intake
[4] = Interior of power unit
[5] = Inverter 1
[6] = Inverter 2
[7...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

Notice: Only for internal Siemens troubleshooting.

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.

r0037[0...19] CO: Power unit temperatures / PM temperatures

PM330

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2006	**Dyn. index:** -
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8021
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Display and connector output for the temperature in the power unit.

Index:
[0] = Inverter maximum value
[1] = Depletion layer maximum value
[2] = Rectifier maximum value
[3] = Air intake
[4] = Interior of power unit
[5] = Inverter 1
[6] = Inverter 2
[7] = Inverter 3
[8] = Reserved
[9] = Reserved
[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

Notice: Only for internal Siemens troubleshooting.

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.

In the case of a fault, the particular shutdown threshold depends on the power unit, and cannot be read out.

r0038 Power factor smoothed / Cos phi smooth

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6799, 8850, 8950
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the smoothed actual power factor. This refers to the electrical power of the basic fundamental signals at the converter output terminals.

Notice: For infeed units, the following applies:

For active powers < 25 % of the rated power, this does not provide any useful information.

Note: Smoothing time constant = 300 ms

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

r0039[0...2] CO: Energy display / Energy display

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [kWh]	- [kWh]	- [kWh]

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

Recommendation: r0042 should be used as process energy display. R0039 supplies as Bico source floating point values in Ws.

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

Dependency: Refer to: p0040

Note: For index 0:
Difference between the energy drawn and energy that is fed back.

p0040 Reset energy consumption display / Energy usage reset

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	1	0

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

Dependency: Refer to: r0039

Note: When this display is reset (p0040), then the process energy display (r0042) is also reset.

r0041 Energy consumption saved / Energy cons saved

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [kWh]	- [kWh]	- [kWh]

Description: Displays the saved energy referred to 100 operating hours.

Dependency: Refer to: p0040

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

r0042[0...2] CO: Process energy display / Proc energy disp

Access level: 2	**Calculated:** -	**Data type:** Integer32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [Wh]	- [Wh]	- [Wh]

Description: Display and connector output for the energy values at the output terminals of the power unit.

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

Dependency: Refer to: p0043

Note: The signal can be displayed as process variable (scaling: 1 = 1 Wh).

This is enabled in p0043.

The display is also reset with p0040 = 1.

If an enable is present in r0043 when the Control Unit powers up, then the value from r0039 is transferred into r0042.

As r0039 serves as a reference signal for r0042, due to format reasons, the process energy display can only process values of r0039 up to 2147483 kWh. r0039 should also be reset using this value.

p0043 BI: Enable energy usage display / Enab energy usage

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to enable/reset the process energy display in r0042.

BI: p0043 = 1 signal:

The process energy display is enabled in r0042.

Dependency: Refer to: r0042

p0045 Display values smoothing time constant / Disp_val T_smooth

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6799
Min	**Max**	**Factory setting**
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].

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

Access level: 1	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2634
Min	**Max**	**Factory setting**
-	-	-

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	-
25	Function bypass active	Yes	No	-
26	Drive inactive or not operational	Yes	No	-
27	De-magnetizing not completed	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:
- the "STO via terminals at the Power Module" function is selected.

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/OFF3".
- 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 hibernation mode is active.

Bit 25 = 1 (function bypass active) if:
- the bypass function 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 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

PM230 PM240 PM250, PM260	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	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
260: Identification circuit
270: Identification stator resistance
290: Identification valve lockout time
300: Stationary measurement selected

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

PM330	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	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
295: Calibration output voltage measurement
300: Stationary measurement selected

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

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

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	CDS effective bit 0	ON	OFF	-
01	CDS effective 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.

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

Access level: 2	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8565
Min	**Max**	**Factory setting**
-	-	-

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DDS effective bit 0	ON	OFF	-
01	DDS effective bit 1	ON	OFF	-

Dependency: Refer to: p0820, p0821, r0837

Note: When selecting the motor data identification routine and the rotating measurement, the drive data set changeover is suppressed.

r0052.0...15 CO/BO: Status word 1 / ZSW 1

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

Description: Display and connector output for status word 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ready for switching 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	-
13	Alarm motor overtemperature	No	Yes	-
14	Motor rotates forwards	Yes	No	-
15	Alarm drive converter overload	No	Yes	-

Notice: p2080 is used to define the signal sources of the PROFIdrive status word interconnection.

Note: For bit 03:

This signal is inverted if it is interconnected to a digital output.

For 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 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:** -
Unit 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	I_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:** -
Unit 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	No	Yes	-
02	OC / OFF3	No	Yes	-
03	Enable operation	Yes	No	-
04	Enable ramp-function generator	Yes	No	-
05	Continue ramp-function generator	Yes	No	-
06	Enable speed setpoint	Yes	No	-
07	Acknowledge fault	Yes	No	-
08	Jog bit 0	Yes	No	3030
09	Jog bit 1	Yes	No	3030
10	Master control 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

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

Description: Display and BICO output for supplementary control word.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fixed setpoint bit 0	Yes	No	-
01	Fixed setpoint bit 1	Yes	No	-
02	Fixed setpoint bit 2	Yes	No	-
03	Fixed setpoint bit 3	Yes	No	-
04	DDS selection bit 0	Yes	No	-
05	DDS selection bit 1	Yes	No	-
08	Technology controller enable	Yes	No	-

Bit	Signal name	1 signal	0 signal	FP
09	DC braking enable	Yes	No	-
11	Reserved	-	-	-
12	Reserved	-	-	-
13	External fault 1 (F07860)	No	Yes	-
15	CDS bit 1	Yes	No	-

Note:

CDS: Command Data Set

DDS: Drive Data Set

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 13: r2138.13 (negated)

Bit 15: r0836.1

r0056.0...15 CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl

PM230
PM240, PM330

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2526
Min	**Max**	**Factory setting**
-	-	-

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	-
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
PM260

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2526
Min	**Max**	**Factory setting**
-	-	-

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	-
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

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

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32

Can be changed: - | **Scaling:** p2000 | **Dyn. index:** -

Unit group: 3_1 | **Unit selection:** p0505 | **Func. diagram:** 2701, 6030, 6799, 6822

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

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

Dependency: Refer to: r0020

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

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

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32

Can be changed: - | **Scaling:** p2000 | **Dyn. index:** -

Unit group: 3_1 | **Unit selection:** p0505 | **Func. diagram:** 6020, 6030, 6031, 6822

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

Description: Display and connector output for the speed setpoint after the setpoint filters.

r0063[0...2] CO: Actual speed / Actual speed

Access level: 3 | **Calculated:** - | **Data type:** FloatingPoint32

Can be changed: - | **Scaling:** p2000 | **Dyn. index:** -

Unit group: 3_1 | **Unit selection:** p0505 | **Func. diagram:** 6020, 6730, 6799, 6841

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

Description: Display and connector output for the speed actual value.

Frequency components from the slip compensation (for induction motors) are not included.

Index:
[0] = Unsmoothed
[1] = Smoothed with p0045
[2] = Calculated from f_set - f_slip (unsmoothed)

Dependency: Refer to: r0021, r0022

Note: The speed actual value r0063[0] – smoothed with p0045 – is additionally displayed in r0063[1]. r0063[1] can be used as process variable for the appropriate smoothing time constant p0045.

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.

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.

r0064 CO: Speed controller system deviation / n_ctrl sys dev

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 6040, 6824
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

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

r0065 Slip frequency / f_Slip

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 2_1	**Unit selection:** p0505	**Func. diagram:** 6310, 6700, 6727, 6730, 6732
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

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

r0066 CO: Output frequency / f_outp

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 2_1	**Unit selection:** p0505	**Func. diagram:** 6730, 6731, 6792, 6799, 6841, 6842, 6843
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Display and connector output for the unsmoothed output frequency of the power unit.
Frequency components from the slip compensation (induction motor) are included.

Dependency: Refer to: r0024

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

r0067 CO: Output current maximum / Current max

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 6300, 6640, 6724, 6828, 6850
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the maximum output current of the power unit.

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

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 6300, 6714, 6799, 7017, 8017, 8021, 8022
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays actual absolute current.

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

Dependency: Refer to: r0027

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

Note: Absolute current value = sqrt(Iq^2 + Id^2)

The absolute value of the current actual value is available smoothed (r0027 with 300 ms, r0068[1] with p0045) and unsmoothed (r0068[0]).

r0069[0...8] CO: Phase current actual value / I_phase act val

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_5	**Unit selection:** p0505	**Func. diagram:** 6730
Min	**Max**	**Factory setting**
- [A]	- [A]	- [A]

Description: Display and connector output for the measured actual phase currents as peak value.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W
[3] = Phase U offset
[4] = Phase V offset
[5] = Phase W offset
[6] = Total U, V, W
[7] = Alpha component
[8] = Beta component

Note: In indices 3 ... 5, the offset currents of the 3 phases, which are added to correct the phase currents, are displayed.

The sum of the 3 corrected phase currents is displayed in index 6.

r0070 CO: Actual DC link voltage / Vdc act val

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
Unit group: 5_2	**Unit selection:** p0505	**Func. diagram:** 6723, 6724, 6730, 6731, 6799
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Display and connector output for the measured actual value of the DC link voltage.

Dependency: Refer to: r0026

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

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

r0071 Maximum output voltage / Voltage max

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
Unit group: 5_1	**Unit selection:** p0505	**Func. diagram:** 6301, 6640, 6700, 6722, 6723, 6724, 6725, 6727
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the maximum output voltage.

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

Note: As the (driven) motor load increases, the maximum output voltage drops as a result of the reduction in DC link voltage.

r0072 CO: Output voltage / U_output

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
Unit group: 5_1	**Unit selection:** p0505	**Func. diagram:** 5700, 6730, 6731, 6799
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the actual output voltage of the power unit.

Dependency: Refer to: r0025

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

r0073 Maximum modulation depth / Modulat_depth max

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723, 6724
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the maximum modulation depth.

Dependency: Refer to: p1803

r0074 CO: Modulat_depth / Mod_depth

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 5730, 6730, 6731, 6799, 8940, 8950
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the actual modulation depth.

Dependency: Refer to: r0028

Note: For space vector modulation, 100% corresponds to the maximum output voltage without overcontrol.

Values above 100 % indicate an overcontrol condition - values below 100% have no overcontrol.

The phase voltage (phase-to-phase, rms) is calculated as follows:(r0074 x r0070) / (sqrt(2) x 100 %).

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

r0075 CO: Current setpoint field-generating / Id_set

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 6700, 6714, 6725
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the field-generating current setpoint (Id_set).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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

r0076 CO: Current actual value field-generating / Id_act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 5700, 5714, 5730, 6700, 6714, 6799
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the field-generating current actual value (Id_act).

Dependency: Refer to: r0029

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

The field-generating current actual value is available smoothed (r0029) and unsmoothed (r0076).

r0077 CO: Current setpoint torque-generating / Iq_set

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 6700, 6710
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the torque-generating current setpoint.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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

r0078 CO: Current actual value torque-generating / Iq_act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 6310, 6700, 6714, 6799
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the torque-generating current actual value (Iq_act).

Dependency: Refer to: r0030

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

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

r0079 CO: Torque setpoint / M_set

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

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

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r0080[0...1] CO: Torque actual value / Actual torque

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

Description: Display and connector output for actual torque value.

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

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)
Refer to: r0031, p0045

Note: The value is available smoothed (r0031 with 100 ms, r0080[1] with p0045) and unsmoothed (r0080[0]).

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

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

r0083 CO: Flux setpoint / Flex setp

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 5722
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the flux setpoint.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r0084[0...1] CO: Flux actual value / Actual flux

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6730, 6731
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the flux actual value.

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

r0087 CO: Actual power factor / Cos phi act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

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

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

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
Unit group: 5_3	**Unit selection:** p0505	**Func. diagram:** 6730
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the actual phase voltage.

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

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

p0096 Application class / Appl_class

PM240

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6019
Min	**Max**	**Factory setting**
0	2	0

Description: Setting the commissioning and control view for various application classes.

Value:
0: Expert
1: Standard Drive Control (SDC)
2: Dynamic Drive Control (DDC)

Dependency: The parameter is preset when commissioning the system for the first time and for the factory setting, depending on the power unit that is connected.

Depending on the setting, the ability to see control parameters is restricted depending on the particular application.

The following applies for p0096 > 0:

The motor data identification routine is preset (p1900 = 2).

The following applies for p0096 = 1:

The motor type (p0300) synchronous or reluctance motor is not possible.

Note: When changing p0096 to 1 or 2, when completing commissioning, fast parameterization should be executed (p3900 > 0).

Depending on the setting, after quick commissioning and/or automatic parameterization, the procedure for motor data identification as well as the setting of the operating mode and parameterization of the closed-loop control must be appropriately adapted.

p0096 Application class / Appl_class

PM330

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6019
Min	**Max**	**Factory setting**
0	2	0

Description: Setting the commissioning and control view for various application classes.

Value:
0: Expert
2: Dynamic Drive Control (DDC)

Dependency: The parameter is preset when commissioning the system for the first time and for the factory setting, depending on the power unit that is connected.

Depending on the setting, the ability to see control parameters is restricted depending on the particular application.

The following applies for p0096 > 0:

The motor data identification routine is preset (p1900 = 2).

Note: When changing p0096 to 1 or 2, when completing commissioning, fast parameterization should be executed (p3900 > 0).

Depending on the setting, after quick commissioning and/or automatic parameterization, the procedure for motor data identification as well as the setting of the operating mode and parameterization of the closed-loop control must be appropriately adapted.

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

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	2	0

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

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

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

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

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

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

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

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

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

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** PDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	1	0

Description: Identification of the Control Unit using an LED.

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

p0133[0...n] Motor configuration / Motor config

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Configuration of the motor when commissioning the motor.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Motor connection type	Delta	Star	-
01	Motor 87 Hz operation	Yes	No	-

Dependency: For standard induction motors (p0301 > 10000), bit 0 is automatically pre-assigned 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

Note: For 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).

For bit 01:

87 Hz operation is only possible in the delta connection type. When selected, the maximum speed p1082 is automatically pre-assigned for a maximum output frequency of 87 Hz.

p0170 Number of Command Data Sets (CDS) / CDS count

Access level: 2	**Calculated:** -	**Data type:** Unsigned8
Can be changed: C(15)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8560
Min	**Max**	**Factory setting**
2	4	2

Description: Sets the number of Command Data Sets (CDS).

Dependency: Refer to: p0010, r3996

Notice: When the data sets are created, short-term communication interruptions may occur.

Note: It is possible to toggle between command parameters (BICO parameters) using this data set changeover.

p0180 Number of Drive Data Sets (DDS) / DDS count

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: C(15)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8565
Min	**Max**	**Factory setting**
1	4	1

Description: Sets the number of Drive Data Sets (DDS).

Dependency: Refer to: p0010, r3996

Notice: When the data sets are created, short-term communication interruptions may occur.

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

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

Description: 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.

Dependency: Refer to: r0018, r0198

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

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

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

Description: 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

Dependency: Refer to: r0018, r0197

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

r0200[0...n] Power unit code number actual / PU code no. act

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** PDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the unique code number of the power unit.

Note: r0200 = 0: No power unit data found

p0201[0...n] Power unit code number / PU code no

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: C(2)	**Scaling:** -	**Dyn. index:** PDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the actual code number from r0200 to acknowledge the power unit being used.

When commissioned for the first time, the code number is automatically transferred from r0200 into p0201.

Note: The parameter is used to identify when the drive is being commissioned for the first time.

The power unit commissioning can only be exited (p0201 = r0200), if the actual and acknowledged code numbers are identical (p0010 = 2).

When the code number is changed, the connection voltage (p0210) is checked and, if necessary, adjusted.

r0203[0...n] Actual power unit type / PU actual type

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Dyn. index:** PDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
2	400	-

Description: Displays the type of power unit found.

Value:
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 / S120)
115: PM250 (SINAMICS G120 / S120)
116: PM260 (SINAMICS G120)
118: SINAMICS G120 Px
120: PM340 (SINAMICS S120 / G120)
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

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

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

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-
14	Internal LC output filter	Yes	No	-
15	Line voltage	1-phase	3-phase	-

p0205 Power unit application / PU application

PM230
PM330

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 2)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

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

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 2)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	7	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
6: S1 duty cycle (for internal use)
7: S6 duty cycle (for internal use)

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

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

PM250
PM260

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 2)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

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.

r0206[0...4] Rated power unit power / PU P_rated

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: 14_6	**Unit selection:** p0100	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the rated power unit power for various load duty cycles.

Index:
[0] = Rated value
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = S1 cont duty cyc
[4] = S6 load duty cycle

Dependency: IECdrives (p0100 = 0): Units kW

NEMA drives (p0100 = 1): Units hp

Refer to: p0100, p0205

r0207[0...4] Rated power unit current / PU PI_rated

PM230
PM240
PM250, PM260

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8021
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the rated power unit power for various load duty cycles.

Index:
[0] = Rated value
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = S1 cont duty cyc
[4] = S6 load duty cycle

Dependency: Refer to: p0205

r0207[0...4] Rated power unit current / PU PI_rated

PM330

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8021
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the rated power unit power for various load duty cycles.

Index:
[0] = Rated value
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = S1 cont duty cyc
[4] = S6 load duty cycle

Dependency: Refer to: p0205

Note: Wide voltage range device 500 V - 690 V:
The rated current displayed refers to a supply voltage of 500 V.

r0208 Rated power unit line supply voltage / PU U_rated

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the rated line supply voltage of the power unit.
r0208 = 400: 380 - 480 V +/-10 %
r0208 = 500: 500 - 600 V +/-10 %
r0208 = 690: 660 - 690 V +/-10 %

r0209[0...4] Power unit maximum current / PU I_max

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8750, 8850, 8950
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

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

Index:
[0] = Catalog
[1] = Load duty cycle with low overload
[2] = Load duty cycle with high overload
[3] = S1 load duty cycle
[4] = S6 load duty cycle

Dependency: Refer to: p0205

p0210 Drive unit line supply voltage / U_connect

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: C(2), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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 deactivated 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 = 500 ... 690 V

p0219 Braking resistor braking power / R_brake P_brake

PM240
PM330

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 2), T	**Scaling:** -	**Dyn. index:** -
Unit group: 14_6	**Unit selection:** p0100	**Func. diagram:** -
Min	**Max**	**Factory setting**
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

PM230
PM240
PM250, PM260

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 2)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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

Dependency: The following parameters are influenced using p0230:

p0230 = 1:

--> p0233 (power unit, motor reactor) = filter inductance

p0230 = 3:

--> p0233 (power unit, motor reactor) = filter inductance

--> p0234 (power unit sine-wave filter capacitance) = filter capacitance

--> p0290 (power unit overload response) = inhibit pulse frequency reduction

--> p1082 (maximum speed) = Fmax filter / pole pair number

--> p1800 (pulse frequency) >= nominal pulse frequency of the filter

--> p1802 (modulator modes) = space vector modulation without overcontrol

p0230 = 4:

--> p0290 (power unit overload response) = inhibit pulse frequency reduction

--> p1802 (modulator modes) = space vector modulation without overcontrol

The user must set the following parameters according to the data sheet of the sine-wave filter and also the user must check whether they are permitted.

--> p0233 (power unit, motor reactor) = filter inductance

--> p0234 (power unit sine-wave filter capacitance) = filter capacitance

--> p1082 (maximum speed) = Fmax filter / pole pair number

--> p1800 (pulse frequency) >= nominal pulse frequency of the filter

Refer to: p0233, p0234, p0290, p1082, p1800, p1802

Note: The parameter cannot be changed if the power unit (e.g. PM260) is equipped with an internal sine-wave filter.

For sine-wave filters, the test pulse evaluation to detect short-circuits is always deactivated.

Only motor reactor filter type can be selected for a synchronous reluctance motor (RESM).

If a filter type cannot be selected, then this filter type is not permitted for the power unit.

p0230 = 1:

Power units with output reactor are limited to output frequencies of 150 Hz.

p0230 = 3:

Power units with sine-wave filter are limited to output frequencies of 200 Hz.

p0230 Drive filter type motor side / Drv filt type mot

PM330

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

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

Value:
0: No filter
1: Motor reactor
2: dv/dt filter

Dependency: The following parameters are influenced using p0230:

p0230 = 1:

--> p0233 (power unit, motor reactor) = filter inductance

Refer to: p0233, p0234, p0290, p1082, p1800, p1802

Note: If a filter type cannot be selected, then this filter type is not permitted for the power unit.

p0230 = 1:

Power units with output reactor are limited to output frequencies of 150 Hz.

r0231[0...1] Power cable length maximum / Cable length max

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [m]	- [m]	- [m]

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

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

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

p0233 Power unit motor reactor / PU mot reactor

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 2), U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [mH]	1000.000 [mH]	0.000 [mH]

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

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

Refer to: p0230

Note: When exiting the quick commissioning using p3900 = 1, the parameter value is set to the value of the defined SIEMENS filter or to zero. For this reason, the parameter value of a third-party filter only has to be entered outside the commissioning phase (p0010 = 0) and then the controller calculation (p0340 = 3) is carried out.

The parameter cannot be changed if the power unit (e.g. PM260) is equipped with an internal sine-wave filter.

p0234 Power unit sine-wave filter capacitance / PU sine filter C

PM230
PM240
PM250, PM260

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 2), U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [µF]	1000.000 [µF]	0.000 [µF]

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

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

Refer to: p0230

Note: The parameter value includes the sum of all of the capacitances of a phase connected in series (phase - ground).

When exiting the quick commissioning using p3900 = 1, the parameter value is set to the value of the defined SIEMENS filter or to zero. For this reason, the parameter value of a third-party filter only has to be entered outside the commissioning phase (p0010 = 0).

The parameter cannot be changed if the power unit (e.g. PM260) is equipped with an internal sine-wave filter.

p0235 Motor reactor in series number / L_mot in SeriesQty

PM240

Access level: 2	**Calculated:** -	**Data type:** Unsigned8
Can be changed: C(1, 2)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
1	3	1

Description: Sets the number of reactors connected in series at the power unit output.

Dependency: Refer to: p0230

Notice: The reactor inductances should be the same.

If the number of motor reactors connected in series does not correspond to this parameter value, then this can result in an unfavorable control behavior.

r0238 Internal power unit resistance / PU R internal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

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

p0247 Voltage measurement configuring / U_mes config

PM330

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(2), U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 0000 0010 0000 bin

Description: Sets the configuration for the output voltage measurement of the power unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate voltage measurement	Yes	No	-
01	Siemens internal	Yes	No	-
02	Siemens internal	Yes	No	-
05	Use voltage measured values for flying restart	Yes	No	-
07	Voltage calibration when switching on	Yes	No	-
08	Voltage monitoring when switching on	Yes	No	-
09	Voltage monitoring cyclic	Yes	No	-

Note: The motor data identification must be executed when using the voltage measurement.

p0251[0...n] Operating hours counter power unit fan / PU fan t_oper

PM330

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** PDS, p0120
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [h]	4294967295 [h]	0 [h]

Description: Displays the power unit fan operating hours.

The number of hours operated can only be reset to 0 in this parameter (e.g. after a fan has been replaced).

Dependency: Refer to: p0252

Refer to: A30042

Note: For liquid-cooled chassis power units, the operating hours of the inner fan are displayed in p0251 and not in p0254.

p0252 Maximum operating time power unit fan / PU fan t_oper max

PM330

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [h]	100000 [h]	40000 [h]

Description: Sets the maximum operating time of the power unit fan.

The prealarm (warning) is output 500 hours before this set value.

The monitoring is deactivated with p0252 = 0.

Dependency: Refer to: p0251

Refer to: A30042

Note: For PM330 power units, the maximum operating time of the fan on the power unit is saved and displayed in p0252. The "Restore factory setting" function or a project download does not influence p0252. Users can manually change the maximum operating time of the fan. The modified value is also saved to the power unit.

p0254[0...n] Operating hours counter power unit fan inside the converter / PU inner fan t_op

PM330

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** PDS, p0120
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [h]	4294967295 [h]	0 [h]

Description: Displays the power unit fan operating hours of the internal fan in the power unit.

The number of hours operated can only be reset to 0 in this parameter (e.g. after a fan has been replaced).

Dependency: Refer to: A30042

Note: For liquid-cooled chassis power units, the operating hours of the inner fan are displayed in p0251 and not in p0254.

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	[0] 6.0 [%] [1] 16.0 [%]

Description: 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).

Index: [0] = Threshold at which precharging starts
[1] = Threshold at which precharging stops

Dependency: Refer to: p1901

Refer to: F30021

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

r0289	**CO: Maximum power unit output current / PU I_outp max**		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	- [Arms]	- [Arms]	- [Arms]

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

p0290	**Power unit overload response / PU overld response**		
PM230	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
PM240	**Can be changed:** T	**Scaling:** -	**Dyn. index:** -
PM250, PM260	**Unit group:** -	**Unit selection:** -	**Func. diagram:** 8021
	Min	**Max**	**Factory setting**
	0	13	2

Description: 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 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.

Value:
0: Reduce output current or output frequency
1: No reduction shutdown when overload threshold is reached
2: Reduce I_output or f_output and f_pulse (not using I2t)
3: Reduce the pulse frequency (not using I2t)
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

Refer to: A05000, A05001, A07805

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.

p0290 Power unit overload response / PU overld response

PM330

Access level: 4	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8021
Min	**Max**	**Factory setting**
0	3	2

Description: 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 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.

Value:
0: Reduce output current or output frequency
1: No reduction shutdown when overload threshold is reached
2: Reduce I_output or f_output and f_pulse (not using I2t)
3: Reduce the pulse frequency (not using I2t)

Dependency: If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only responses can be selected without pulse frequency reduction (p0290 = 0, 1).

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

Refer to: A05000, A05001, A07805

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, 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.

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8021
Min	**Max**	**Factory setting**
0 [°C]	25 [°C]	[0] 5 [°C] [1] 15 [°C]

Description: 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.

Index:
[0] = Overtemperature heat sink
[1] = Temperature rise power semiconductor (chip)

Dependency: Refer to: r0037, p0290

Refer to: A05000, A05001

p0294 Power unit alarm with I2t overload / PU I2t alrm thresh

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8021
Min	**Max**	**Factory setting**
10.0 [%]	100.0 [%]	95.0 [%]

Description: Sets the alarm threshold for the I2t power unit overload.

If this threshold is exceeded, an overload alarm is generated and the system responds as parameterized in p0290.

Dependency: Refer to: r0036, p0290

Refer to: A07805

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

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

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

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

Dependency: Refer to: F30003

r0297 DC link voltage overvoltage threshold / Vdc U_upper_thresh

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

Dependency: Refer to: F30002

p0300[0...n]	**Motor type selection / Mot type sel**		
PM230 PM250, PM260	**Access level:** 2	**Calculated:** -	**Data type:** Integer16
	Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS, p0130
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6310
	Min	**Max**	**Factory setting**
	0	105	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 = induction motor

2 = synchronous motor

xx = motor without code number

xxx = motor with code number

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).

The following applies for values < 100:

Motor data must be manually entered.

The following applies for values >= 100:

Motor data are automatically loaded from an internal list.

Value:

0: No motor
1: Induction motor
2: Synchronous motor
10: 1LE1 induction motor (not a code number)
13: 1LG6 induction motor (not a code number)
17: 1LA7 induction motor (not a code number)
19: 1LA9 induction motor (not a code number)
100: 1LE1 induction motor
101: 1PC1 induction motor
105: 1LE5 induction motor

Dependency: When selecting p0300 = 10 ... 19, 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.

Notice: If a catalog motor is selected (p0300 >= 100) and an associated motor code number (p0301), then the parameters that are associated with this list cannot be changed (write protection). The write protection is canceled if the motor type p0300 is set to a non-Siemens motor that matches p0301 (e.g. p0300 = 1 for p0301 = 1xxxx). Write protection is automatically canceled when the results of motor data identification are copied to the motor parameters.

The motor type of a catalog motor corresponds to the upper three digits of the code number or the following assignment (if the particular motor type is listed):

Type/code number ranges

100 / 100xx, 110xx, 120xx, 130xx, 140xx, 150xx

Note: Once the Control Unit has been switched on for the first time or if the factory settings have been defined accordingly, the motor type is preconfigured to induction motor (p0300 = 1).

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

A motor type with a value above p0300 >= 100 describes motors for which a motor parameter list exists.

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

PM240	**Access level:** 2	**Calculated:** -	**Data type:** Integer16
	Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS, p0130
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6310
	Min	**Max**	**Factory setting**
	0	603	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 = induction motor

2 = synchronous motor

6 = synchronous reluctance motor

xx = motor without code number

xxx = motor with code number

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).

The following applies for values < 100:

Motor data must be manually entered.

The following applies for values >= 100:

Motor data are automatically loaded from an internal list.

Value:

0: No motor
1: Induction motor
2: Synchronous motor
6: Reluctance motor
10: 1LE1 induction motor (not a code number)
13: 1LG6 induction motor (not a code number)
17: 1LA7 induction motor (not a code number)
19: 1LA9 induction motor (not a code number)
100: 1LE1 induction motor
101: 1PC1 induction motor
105: 1LE5 induction motor
108: 1PH8 induction motor
600: 1FP1 synchronous reluctance motor
603: 1FP3 synchronous reluctance motor OEM

Dependency: When selecting p0300 = 10 ... 19, parameters p0335, p0626, p0627, and p0628 of the thermal motor model are pre-assigned as a function of p0307 and p0311.

For p0096 = 1 (Standard Drive Control) synchronous motor types cannot be selected.

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.

Notice: If a catalog motor is selected (p0300 >= 100) and an associated motor code number (p0301), then the parameters that are associated with this list cannot be changed (write protection). The write protection is canceled if the motor type p0300 is set to a non-Siemens motor that matches p0301 (e.g. p0300 = 1 for p0301 = 1xxxx). Write protection is automatically canceled when the results of motor data identification are copied to the motor parameters.

The motor type of a catalog motor corresponds to the upper three digits of the code number or the following assignment (if the particular motor type is listed):

Type/code number ranges

100 / 100xx, 110xx, 120xx, 130xx, 140xx, 150xx

108 / 108xx, 118xx, 128xx, 138xx, 148xx, 158xx

Note: Once the Control Unit has been switched on for the first time or if the factory settings have been defined accordingly, the motor type is preconfigured to induction motor (p0300 = 1).

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

A motor type with a value above p0300 >= 100 describes motors for which a motor parameter list exists.

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

PM330	**Access level:** 2	**Calculated:** -	**Data type:** Integer16
	Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS, p0130
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6310
	Min	**Max**	**Factory setting**
	0	105	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 = induction motor

2 = synchronous motor

xx = motor without code number

xxx = motor with code number

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).

The following applies for values < 100:

Motor data must be manually entered.

The following applies for values >= 100:

Motor data are automatically loaded from an internal list.

Value:
0: No motor
1: Induction motor
2: Synchronous motor
10: 1LE1 induction motor (not a code number)
13: 1LG6 induction motor (not a code number)
14: 1xx1 SIMOTICS FD induction motor (not a code number)
17: 1LA7 induction motor (not a code number)
18: 1LA8 / 1PQ8 standard induction motor series
19: 1LA9 induction motor (not a code number)
100: 1LE1 induction motor
105: 1LE5 induction motor

Dependency: When the motor type is changed, the code number in p0301 may be reset to 0.

When selecting p0300 = 10 ... 19, 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.

Notice: If a catalog motor is selected (p0300 >= 100) and an associated motor code number (p0301), then the parameters that are associated with this list cannot be changed (write protection). The write protection is canceled if the motor type p0300 is set to a non-Siemens motor that matches p0301 (e.g. p0300 = 1 for p0301 = 1xxxx). Write protection is automatically canceled when the results of motor data identification are copied to the motor parameters.

The motor type of a catalog motor corresponds to the upper three digits of the code number or the following assignment (if the particular motor type is listed):

Type/code number ranges

100 / 100xx, 110xx, 120xx, 130xx, 140xx, 150xx

Note: Once the Control Unit has been switched on for the first time or if the factory settings have been defined accordingly, the motor type is preconfigured to induction motor (p0300 = 1).

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

A motor type with a value above p0300 >= 100 describes motors for which a motor parameter list exists.

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
Unit 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

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).

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

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6301, 6724
Min	**Max**	**Factory setting**
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.

p0305[0...n] Rated motor current / Mot I_rated

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6301
Min	**Max**	**Factory setting**
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.

p0306[0...n] Number of motors connected in parallel / Motor qty

Access level: 1	**Calculated:** -	**Data type:** Unsigned8
Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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).

Recommendation: 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.

p0307[0...n] Rated motor power / Mot P_rated

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS
Unit group: 14_6	**Unit selection:** p0100	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [kW]	100000.00 [kW]	0.00 [kW]

Description: Sets the rated motor power (rating plate).

Dependency: IECdrives (p0100 = 0): Units kW

NEMA drives (p0100 = 1): Units hp

NEMA drives (p0100 = 2): Unit kW

Refer to: p0100

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: 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.

p0308[0...n] Rated motor power factor / Mot cos phi rated

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000	1.000	0.000

Description: Sets the rated motor power factor (cos phi, rating plate).

For a parameter value of 0.000, the power factor is internally calculated and displayed in r0332.

Dependency: This parameter is only available for p0100 = 0, 2.

Refer to: p0100, p0309, r0332

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 = 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.

p0309[0...n] Rated motor efficiency / Mot eta_rated

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [%]	99.9 [%]	0.0 [%]

Description: Sets the rated motor efficiency (rating plate).

For a parameter value of 0.0, the power factor is internally calculated and displayed in r0332.

Dependency: This parameter is only visible for NEMA motors (p0100 = 1, 2).

Refer to: p0100, p0308, r0332

Note: The parameter is not used for synchronous motors.

p0310[0...n] Rated motor frequency / Mot f_rated

PM230
PM240
PM250, PM260

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** 6301
Min	**Max**	**Factory setting**
0.00 [Hz]	650.00 [Hz]	0.00 [Hz]

Description: Sets the rated motor frequency (rating plate).

Dependency: The number of pole pairs (r0313) is automatically re-calculated when the parameter is changed (together with p0311), if p0314 = 0.

The rated frequency is restricted to values between 1.00 Hz and 650.00 Hz.

Refer to: p0311, r0313, p0314

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 p0310 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. The pre-assignment has been completed if the status display r3996 returns to zero.

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

p0310[0...n] Rated motor frequency / Mot f_rated

PM330

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** 6301
Min	**Max**	**Factory setting**
0.00 [Hz]	103.00 [Hz]	0.00 [Hz]

Description: Sets the rated motor frequency (rating plate).

Dependency: The number of pole pairs (r0313) is automatically re-calculated when the parameter is changed (together with p0311), if p0314 = 0.

The rated frequency is restricted to values between 1.00 Hz and 100.00 Hz.

Refer to: p0311, r0313, p0314

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 p0310 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. The pre-assignment has been completed if the status display r3996 returns to zero.

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

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

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

Description: Sets the rated motor speed (rating plate).

For p0311 = 0, the rated motor slip of induction motors is internally calculated and displayed in r0330.

It is especially important to correctly enter the rated motor speed for vector control and slip compensation for U/f control.

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

Refer to: p0310, r0313, p0314

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 p0311 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. The pre-assignment has been completed if the status display r3996 returns to zero.

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

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 5300
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of motor pole pairs. The value is used for internal calculations.

r0313 = 1: 2-pole motor

r0313 = 2: 4-pole motor, etc.

Dependency: For p0314 > 0, the entered value is displayed in r0313.

For p0314 = 0, the pole pair number (r0313) is automatically calculated from the rated power (p0307), rated frequency (p0310) and rated speed (p0311).

Refer to: p0307, p0310, p0311, p0314

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

p0314[0...n] Motor pole pair number / Mot pole pair No.

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the motor pole pair number.

p0314 = 1: 2-pole motor

p0314 = 2: 4-pole motor, etc.

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

Notice: If p0314 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly.

For induction motors, it is only necessary to enter the value if the rated motor slip is so high that the pole pair number r0313, obtained when making the calculation based on the rated frequency and rated speed, is too low.

p0316[0...n] Motor torque constant / Mot kT

PM230	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
PM240	**Can be changed:** C(1, 3), U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
PM250, PM260	**Unit group:** 28_1	**Unit selection:** p0100	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0.00 [Nm/A]	400.00 [Nm/A]	0.00 [Nm/A]

Description: Sets the torque constant of the synchronous motor.

p0316 = 0:

The torque constant is calculated from the motor data.

p0316 > 0:

The selected value is used as torque constant.

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: This parameter is not used for induction motors (p0300 = 1xx).

p0318[0...n] Motor stall current / Mot I_standstill

PM240	**Access level:** 4	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: C(3)	**Scaling:** -	**Dyn. index:** MDS, p0130
	Unit group: -	**Unit selection:** -	**Func. diagram:** 8017
	Min	**Max**	**Factory setting**
	0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the stall current for synchronous motors (p0300 = 2xx), as well as for synchronous reluctance motors (p0300 = 6xx).

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 used for the I2t monitoring of the motor (refer to p0611).

This parameter is not used for induction motors (p0300 = 1xx).

p0320[0...n] Motor rated magnetizing current/short-circuit current / Mot I_mag_rated

	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0.000 [Arms]	5000.000 [Arms]	0.000 [Arms]

Description: 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.

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 magnetizing current p0320 for induction motors is reset when quick commissioning is exited with p3900 > 0.

If, for induction motors, the magnetizing current p0320 is changed outside the commissioning phase (p0010 > 0), then the magnetizing inductance p0360 is changed so that the EMF r0337 remains constant.

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

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

Description: Sets the maximum motor speed.

Dependency: Refer to: p1082

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

Note: The parameter has no significance for a value of p0322 = 0.

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

PM230
PM240
PM250, PM260

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [Arms]	20000.00 [Arms]	0.00 [Arms]

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

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 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.

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

PM230
PM240
PM250, PM260

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [Arms]	10000.000 [Arms]	0.000 [Arms]

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

The current of the 2nd phase is set in p0329.

The two-stage technique is selected with p1980 = 4.

Dependency: Refer to: p0329, p1980, r1992

Notice: When the motor code (p0301) is changed, it is possible that p0325 is not pre-assigned.

p0325 can be pre-assigned using p0340 = 3.

Note: The value is automatically pre-assigned for the following events:

- For p0325 = 0 and automatic calculation of the closed-loop control parameters (p0340 = 1, 2, 3).
- for quick commissioning (p3900 = 1, 2, 3).

p0327[0...n] Optimum motor load angle / Mot phi_load opt

PM230
PM240
PM250, PM260

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** 6721, 6838
Min	**Max**	**Factory setting**
0.0 [°]	135.0 [°]	90.0 [°]

Description: Sets the optimum load angle for synchronous motors with reluctance torque.

The load angle is measured at the rated motor current.

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: 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).

p0328[0...n] Motor reluctance torque constant / Mot kT_reluctance

PM230
PM240
PM250, PM260

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** 6721, 6836
Min	**Max**	**Factory setting**
-1000.00 [mH]	1000.00 [mH]	0.00 [mH]

Description: Sets the reluctance torque constant for synchronous motors with reluctance torque (e.g. 1FE ... motors).
This parameter has no significance for induction motors.

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: For synchronous motors without reluctance torque, the value 0 must be set.

p0329[0...n] Motor pole position identification current / Mot PolID current

PM230
PM240
PM250, PM260

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0000 [Arms]	10000.0000 [Arms]	0.0000 [Arms]

Description: 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.

Dependency: The following applies for vector drives:
If a maximum current (p0323) was not parameterized, then p0329 is limited to the rated motor current.
Refer to: p0325, p1980, r1992

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.

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the rated motor slip.

Dependency: The rated slip is calculated from the rated frequency, rated speed and number of pole pairs.
Refer to: p0310, p0311, r0313

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

r0331[0...n] Actual motor magnetizing current/short-circuit current / Mot I_mag_rtd act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6722
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Induction motor:
Displays the rated magnetizing current from p0320.
For p0320 = 0, the internally calculated magnetizing current is displayed.
Synchronous motor:
Displays the rated short-circuit current from p0320.

Dependency: If p0320 was not entered, then the parameter is calculated from the rating plate parameters.

r0332[0...n] Rated motor power factor / Mot cos phi rated

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the rated power factor for induction motors.
For IEC motors, the following applies (p0100 = 0):
For p0308 = 0, the internally calculated power factor is displayed.
For p0308 > 0, this value is displayed.
For NEMA motors, the following applies (p0100 = 1, 2):
For p0309 = 0, the internally calculated power factor is displayed.
For p0309 > 0, this value is converted into the power factor and displayed.

Dependency: If p0308 is not entered, the parameter is calculated from the rating plate parameters.

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

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: 7_4	**Unit selection:** p0100	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the rated motor torque.

Dependency: IEC drives (p0100 = 0): unit Nm
NEMA drives (p0100 = 1): unit lbf ft

Note: For induction motors, r0333 is calculated from p0307 and p0311.
For synchronous motors, r0333 is calculated from p0305, p0316, p0327 and p0328.

p0335[0...n] Motor cooling type / Mot cool type

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 3), T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	128	0

Description: Sets the motor cooling system used.

Value:
0: Natural ventilation
1: Forced cooling
2: Liquid cooling
128: No fan

Dependency: For 1LA7 motors (p0300), the parameter is pre-set as a function of p0307 and p0311.

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.

r0337[0...n] Rated motor EMF / Mot EMF_rated

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the rated EMF of the motor.

Note: EMF: Electromotive force

p0340[0...n] Automatic calculation motor/control parameters / Calc auto par

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	5	0

Description: Setting to automatically calculate motor parameters and U/f open-loop and closed-loop control parameters from the rating plate data.

Value:
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

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

The following parameters are influenced using p0340:

p0340 = 1:

--> All of the parameters influenced for p0340 = 2, 3, 4, 5

--> p0341, p0342, 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, p1570, p1580, p1574, p1750, p1759, p1802, p1803, p2140, p2142, p2148, p2150, p2161, p2162, p2163, p2164, p2170, p2175, p2177, p2194, p2390, p2392, p2393

Note: p0340 = 1 contains the calculations of p0340 = 2, 3, 4, 5.

p0340 = 2 calculates the motor parameters (p0350 ... p0360).

p0340 = 3 contains the calculations of p0340 = 4, 5.

p0340 = 4 only calculates the controller parameters.

p0340 = 5 only calculates the controller limits.

When quick commissioning is exited using p3900 > 0, p0340 is automatically set to 1.

At the end of the calculations, p0340 is automatically set to 0.

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

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: 25_1	**Unit selection:** p0100	**Func. diagram:** 6020, 6030, 6031, 6822
Min	**Max**	**Factory setting**
0.000000 [kgm²]	100000.000000 [kgm²]	0.000000 [kgm²]

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

Dependency: IEC drives (p0100 = 0): unit kg m^2

NEMA drives (p0100 = 1): unit lb ft^2

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

Refer to: p0342, r0345

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

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

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6020, 6030, 6031, 6822
Min	**Max**	**Factory setting**
1.000	10000.000	1.000

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

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

Refer to: p0341, r0345

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

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

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	- [Arms]

Description: Displays the identified rated motor current.

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

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** MDS
Unit group: 27_1	**Unit selection:** p0100	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [kg]	50000.0 [kg]	0.0 [kg]

Description: Sets the motor weight.

Dependency: IEC drives (p0100 = 0): unit kg

NEMA drives (p0100 = 1): unit lb

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 model of the induction motor.

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

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [s]	- [s]	- [s]

Description: Displays the rated motor starting time.

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

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

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

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	20.000 [s]	0.000 [s]

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

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

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

Note: The parameter is calculated using p0340 = 1, 3.

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

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

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

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	20.000 [s]	0.000 [s]

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

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

Note: The parameter is calculated using p0340 = 1, 3.

For induction motors, 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).

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

Access level: 3	**Calculated:** p0340 = 1,2	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00000 [ohm]	2000.00000 [ohm]	0.00000 [ohm]

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

Dependency: 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).

p0352[0...n] Cable resistance / R_cable

PM230	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
PM240	**Can be changed:** C(3), U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
PM250, PM260	**Unit group:** -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	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.

p0352[0...n] Cable resistance / R_cable

PM330	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	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.

The difference with which p0352 was manually changed, must also be subtracted from reference parameter p0629 of the Rs measurement.

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.

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

	Access level: 3	**Calculated:** p0340 = 1,2	**Data type:** FloatingPoint32
	Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6727
	Min	**Max**	**Factory setting**
	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).

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

Access level: 3	**Calculated:** p0340 = 1,2	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

For a controlled reluctance motor (p0300 = 6), this is the direct axis stator inductance at the rated operating point.

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

PM230
PM240
PM250, PM260

Access level: 3	**Calculated:** p0340 = 1,2	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Sets the stator direct-axis inductance of the synchronous motor.

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

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

For a controlled reluctance motor (p0300 = 6), this is the direct axis stator inductance at the rated operating point.

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

Access level: 3	**Calculated:** p0340 = 1,2	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6727
Min	**Max**	**Factory setting**
0.00000 [mH]	1000.00000 [mH]	0.00000 [mH]

Description: Sets the rotor/secondary section leakage inductance of the motor.

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

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 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).

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

Access level: 3	**Calculated:** p0340 = 1,2	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6727
Min	**Max**	**Factory setting**
0.00000 [mH]	10000.00000 [mH]	0.00000 [mH]

Description: Sets the magnetizing inductance of the motor.

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

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).

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

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723, 6838
Min	**Max**	**Factory setting**
10.0 [%]	800.0 [%]	60.0 [%]

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

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

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

Dependency: The following applies for the flux values:

p0362 < p0363 < p0364 < p0365

Refer to: p0366

Note: For induction motors, p0362 = 100 % 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).

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

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723, 6838
Min	**Max**	**Factory setting**
10.0 [%]	800.0 [%]	85.0 [%]

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

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

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

Dependency: The following applies for the flux values:

p0362 < p0363 < p0364 < p0365

Refer to: p0367

Note: For induction motors, p0363 = 100 % 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).

p0364[0...n] Motor saturation characteristic flux 3 / Mot saturat.flux 3

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723, 6838
Min	**Max**	**Factory setting**
10.0 [%]	800.0 [%]	115.0 [%]

Description: The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points.
This parameter specifies the y coordinate (flux) for the 3rd value pair of the characteristic.
Sets the third flux value of the saturation characteristic as a [%] referred to the rated motor flux (100 %).

Dependency: The following applies for the flux values:
p0362 < p0363 < p0364 < p0365
Refer to: p0368

Note: 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).

p0365[0...n] Motor saturation characteristic flux 4 / Mot saturat.flux 4

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723, 6838
Min	**Max**	**Factory setting**
10.0 [%]	800.0 [%]	125.0 [%]

Description: The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points.
This parameter specifies the y coordinate (flux) for the 4th value pair of the characteristic.
Sets the fourth flux value of the saturation characteristic as a [%] referred to the rated motor flux (100 %).

Dependency: The following applies for the flux values:
p0362 < p0363 < p0364 < p0365
Refer to: p0369

Note: 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).

p0366[0...n] Motor saturation characteristic I_mag 1 / Mot sat. I_mag 1

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723, 6838
Min	**Max**	**Factory setting**
5.0 [%]	800.0 [%]	50.0 [%]

Description: The saturation characteristics (flux as a function of the magnetizing current) is defined using 4 points.
This parameter specifies the x coordinate (magnetizing current) for the 1st value pair of the characteristic.
Sets the first magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).

Dependency: The following applies for the magnetizing currents:
p0366 < p0367 < p0368 < p0369
Refer to: p0362

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

p0367[0...n] Motor saturation characteristic I_mag 2 / Mot sat. I_mag 2

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723, 6838
Min	**Max**	**Factory setting**
5.0 [%]	800.0 [%]	75.0 [%]

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

This parameter specifies the x coordinate (magnetizing current) for the 2nd value pair of the characteristic.

Sets the second magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

Refer to: p0363

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

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

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723, 6838
Min	**Max**	**Factory setting**
5.0 [%]	800.0 [%]	150.0 [%]

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

This parameter specifies the x coordinate (magnetizing current) for the 3rd value pair of the characteristic.

Sets the third magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

Refer to: p0364

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

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

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723, 6838
Min	**Max**	**Factory setting**
5.0 [%]	800.0 [%]	210.0 [%]

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

This parameter specifies the x coordinate (magnetizing current) for the 4th value pair of the characteristic.

Sets the fourth magnetization current of the saturation characteristic in [%] with reference to the rated magnetization current (r0331).

Dependency: The following applies for the magnetizing currents:

p0366 < p0367 < p0368 < p0369

Refer to: p0365

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

r0370[0...n] Motor stator resistance cold / Mot R_stator cold

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the motor stator resistance at an ambient temperature (p0625).
The value does not include the cable resistance.

Dependency: Refer to: p0625

r0372[0...n] Cable resistance / Mot R_cable

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the total cable resistance between power unit and motor, as well as the internal converter resistance.

Dependency: Refer to: r0238, p0352

r0373[0...n] Motor rated stator resistance / Mot R_stator rated

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the rated motor stator resistance at rated temperature (total of p0625 and p0627).

Dependency: Refer to: p0627

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

r0374[0...n] Motor rotor resistance cold / Mot R_r cold

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the motor rotor resistance at an ambient temperature p0625.

Dependency: Refer to: p0625

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

r0376[0...n] Rated motor rotor resistance / Mot rated R_rotor

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [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).

r0377[0...n] Motor leakage inductance total / Mot L_leak total

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6640, 6714, 6721, 6828, 6834, 6836
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

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

r0378[0...n] Motor stator inductance d axis / Mot L_stator d

PM230

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

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

r0382[0...n] Motor magnetizing inductance transformed / Mot L_magn transf

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the magnetizing inductance of the motor.

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

r0384[0...n] Motor rotor time constant / damping time constant d axis / Mot T_rotor/T_Dd

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 6722, 6837
Min	**Max**	**Factory setting**
- [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.

r0386[0...n] Motor stator leakage time constant / Mot T_stator leak

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the stator leakage time constant.

Note: 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.

r0394[0...n] Rated motor power / Mot P_rated

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: 14_6	**Unit selection:** p0100	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the rated motor power.

Note: The parameter displays p0307. For p0307 = 0, r0394 is calculated from p0304 and p0305 (only for induction motors).

Depending on the actual motor type, deviations can occur from the actual rated motor power.

r0395[0...n] Actual stator resistance / R_stator act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the actual stator resistance (phase value).

The parameter value also contains the temperature-independent cable resistance.

Dependency: In the case of induction motors the parameter is also affected by the motor temperature model.

Refer to: p0350, p0352, p0620

Note: In each case, only the stator resistance of the active Motor Data Set is included with the stator temperature of the thermal motor model.

r0396[0...n] Actual rotor resistance / R_rotor act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the actual rotor resistance (phase value).

The parameter is affected by the motor temperature model.

Dependency: Refer to: p0354, p0620

Note: In each case, only the rotor resistance of the active Motor Data Set is included with the rotor temperature of the thermal motor model.

This parameter is not used for synchronous motors (p0300 = 2xx).

p0500 Technology application / Tec application

PM230

Access level: 4	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 5), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

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 %

p0500 Technology application / Tec application

PM240

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 5), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	5	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
5: Starting with a high break loose torque

Dependency: For p0096 = 1, 2 (Standard, Dynamic Drive Control) p0500 cannot be changed.

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

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

Note: The calculation of parameters dependent on the technology application can be called up as follows:

- when exiting quick commissioning using p3900 > 0
- when writing p0340 = 1, 3, 5

For p0500 = 0 and when the calculation is initiated, the following parameters are set:

- p1574 = 10 V
- p1750.2 = 0
- p1802 = 4 (SVM/FLB without overcontrol) (PM240: p1802 = 0, PM260: p1802 = 2)
- p1803 = 106 % (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 %)

For p0500 = 5:

- p1574, p1750.2, p1802, p1803 same as for p0500 = 0
- p1610 = 80 %, p1611 = 80 % (average up to higher starting torque)
- p1310 = 80 %, p1311 = 30 %

In all cases, the DC component compensation is activated (p3855 = 7).

For 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.

For p1802 / p1803:

p1802 and p1803 are only changed, in all cases, if a sine-wave output filter (p0230 = 3, 4) has not been selected.

p0500 Technology application / Tec application

PM250
PM260

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 5), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

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

Note: The calculation of parameters dependent on the technology application can be called up as follows:

- when exiting quick commissioning using p3900 > 0
- when writing p0340 = 1, 3, 5

For p0500 = 0 and when the calculation is initiated, the following parameters are set:

- p1574 = 10 V
- p1750.2 = 0
- p1802 = 4 (SVM/FLB without overcontrol) (PM240: p1802 = 0, PM260: p1802 = 2)
- p1803 = 106 % (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 %)

For p0500 = 5:

- p1574, p1750.2, p1802, p1803 same as for p0500 = 0
- p1610 = 80 %, p1611 = 80 % (average up to higher starting torque)
- p1310 = 80 %, p1311 = 30 %

In all cases, the DC component compensation is activated (p3855 = 7).

For 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.

For p1802 / p1803:

p1802 and p1803 are only changed, in all cases, if a sine-wave output filter (p0230 = 3, 4) has not been selected.

p0500 Technology application / Tec application

PM330

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 5), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
1	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:
1: Pumps and fans
3: Pumps and fans, efficiency optimization

Dependency: For p0096 = 2 (Dynamic Drive Control) p0500 cannot be changed.

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

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 = 1 and when the calculation is initiated, the following parameters are set:

- p1570 = 100 %
- p1580 = 0 % (no efficiency optimization)
- p1574 = 2 V
- p1750.2 = 0
- p1802 = 9 or 19 (optimized pulse pattern for p0300 = 14)
- p1803 = 106 %

For p0500 = 3 and when the calculation is initiated, the following parameters are set:

- p1570 = 103 % (flux boost for full load)
- p1580 = 100 % (efficiency optimization)
- p1574 = 2 V
- p1750.2 = 1: Encoderless control of the induction motor is effective down to zero frequency.
- p1802 = 9 or 19 (optimized pulse pattern for p0300 = 14)
- p1803 = 106 %

p0501 Technological application (Standard Drive Control) / Techn appl SDC

PM240

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 5), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	1	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: Constant load (linear characteristic)
1: Speed-dependent load (parabolic characteristic)

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1300

Notice: If the technological application is set to p0501 = 0, 1 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 p0501 = 0, 1 and when the calculation is initiated, the following parameters are set:

- p1802 = 0
- p1803 = 106 %
- p3855.0 = 1 (DC quantity control on)

For p1802 / p1803:

These parameters are only changed, in all cases, if a sine-wave output filter (p0230 = 3, 4) has not been selected.

p0502 Technological application (Dynamic Drive Control) / Techn appl DDC

PM240

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 5), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	5	0

Description: Sets the technology application for dynamic applications (p0096 = 2).

The parameter influences the calculation of open-loop and closed-loop control parameters that is e.g. initiated using p0340 or p3900.

Value:
0: Standard drive (e.g. pumps, fans)
1: Dynamic starting or reversing
5: Heavy-duty starting (e.g. extruders, compressors)

Dependency: 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 or 5

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1610, p1750

Note: When entering p0502 and initiating the calculation, the following parameters are set:

p0502 = 0:

- p1750.0/1/7 = 1 (start and reverse in open-loop control with rugged switchover limits)
- p1610 = 50 %, p1611 = 30 % (low up to average starting torque)

p0502 = 1:

- p1750.0/1/7 = 0 (start and reverse in closed-loop speed control with shorter acceleration times)
- p1610 = 50 %, p1611 = 30 % (only effective, if the drive is switched-on with a speed setpoint of zero)

p0502 = 5:

- p1750.0/1/7 = 1 (start and reverse in open-loop control with rugged switchover limits)
- p1610 = 80 %, p1611 = 80 % (average up to higher starting torque)

p1750.6 = 1 is always set, p1574 (voltage reserve) is preassigned, depending on p0205 (power unit application).

p0502 Technological application (Dynamic Drive Control) / Techn appl DDC

PM330

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1, 5), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
3	3	3

Description: Sets the technology application for dynamic applications (p0096 = 2).

The parameter influences the calculation of open-loop and closed-loop control parameters that is e.g. initiated using p0340 or p3900.

Value:
3: Pumps and fans, efficiency optimization

Dependency: 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 or 5

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1610, p1750

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:
- p1570 = 103 % (flux boost for full load)
- p1580 = 100 % (efficiency optimization)
- p1574 = 2 V
- p1750.2 = 1: Encoderless control of the induction motor is effective down to zero frequency.
- p1802 = 9 or 19 (optimized pulse pattern for p0300 = 14)
- p1803 = 106 %

p0505 Selecting the system of units / Unit sys select

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(5)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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 p1744, p1752, p1755).

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.

p0514[0...9] Scaling-specific reference values / Scal spec ref val

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000001	10000000.000000	1.000000

Description: Sets the reference values for the specific scaling of BICO parameters.

The specific scaling is active when interconnecting with other BICO parameters, and can be used in the following cases:

1. Parameter with the marking "Scaling: p0514".
2. Changing the standard scaling for parameters with the marking "Scaling: p2000" ... "Scaling: p2007".

Relative values refer to the corresponding reference value. The reference value corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

To specifically scale BICO parameters, proceed as follows:
- set the reference value (p0514[0...9]).
- set the numbers of the parameters, which should be active for the scaling, corresponding to the index of p0514 (p0515[0...19] ... p0524[0...19]).

For parameters with the marking "Scaling: p0514", which are not entered in p0515[0...19] to p0524[0...19], the reference value 1.0 (factory setting) applies.

Index: [0] = Parameters in p0515[0...19]
[1] = Parameters in p0516[0...19]
[2] = Parameters in p0517[0...19]
[3] = Parameters in p0518[0...19]
[4] = Parameters in p0519[0...19]
[5] = Parameters in p0520[0...19]
[6] = Parameters in p0521[0...19]
[7] = Parameters in p0522[0...19]
[8] = Parameters in p0523[0...19]
[9] = Parameters in p0524[0...19]

Dependency: Refer to: p0515, p0516, p0517, p0518, p0519, p0520, p0521, p0522, p0523, p0524

p0515[0...19] Scaling specific parameters referred to p0514[0] / Scal spec p514[0]

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[0] for the specific scaling.
p0515[0]: parameter number
p0515[1]: parameter number
p0515[2]: parameter number
...
p0515[19]: parameter number

Dependency: Refer to: p0514

p0516[0...19] Scaling specific parameters referred to p0514[1] / Scal spec p514[1]

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[1] for the specific scaling.
p0516[0]: parameter number
p0516[1]: parameter number
p0516[2]: parameter number
...
p0516[19]: parameter number

Dependency: Refer to: p0514

p0517[0...19] Scaling specific parameters referred to p0514[2] / Scal spec p514[2]

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[2] for the specific scaling.
p0517[0]: parameter number
p0517[1]: parameter number
p0517[2]: parameter number
...
p0517[19]: parameter number

Dependency: Refer to: p0514

p0518[0...19] Scaling specific parameters referred to p0514[3] / Scal spec p514[3]

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[3] for the specific scaling.
p0518[0]: parameter number
p0518[1]: parameter number
p0518[2]: parameter number
...
p0518[19]: parameter number

Dependency: Refer to: p0514

p0519[0...19] Scaling specific parameters referred to p0514[4] / Scal spec p514[4]

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[4] for the specific scaling.
p0519[0]: parameter number
p0519[1]: parameter number
p0519[2]: parameter number
...
p0519[19]: parameter number

Dependency: Refer to: p0514

p0520[0...19] Scaling specific parameters referred to p0514[5] / Scal spec p514[5]

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[5] for the specific scaling.
p0520[0]: parameter number
p0520[1]: parameter number
p0520[2]: parameter number
...
p0520[19]: parameter number

Dependency: Refer to: p0514

p0521[0...19] Scaling specific parameters referred to p0514[6] / Scal spec p514[6]

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[6] for the specific scaling.
p0521[0]: parameter number
p0521[1]: parameter number

p0521[2]: parameter number
...
p0521[19]: parameter number

Dependency: Refer to: p0514

p0522[0...19] Scaling specific parameters referred to p0514[7] / Scal spec p514[7]

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[7] for the specific scaling.
p0522[0]: parameter number
p0522[1]: parameter number
p0522[2]: parameter number
...
p0522[19]: parameter number

Dependency: Refer to: p0514

p0523[0...19] Scaling specific parameters referred to p0514[8] / Scal spec p514[8]

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[8] for the specific scaling.
p0523[0]: parameter number
p0523[1]: parameter number
p0523[2]: parameter number
...
p0523[19]: parameter number

Dependency: Refer to: p0514

p0524[0...19] Scaling specific parameters referred to p0514[9] / Scal spec p514[9]

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the parameters with reference value in p0514[9] for the specific scaling.
p0524[0]: parameter number
p0524[1]: parameter number
p0524[2]: parameter number
...
p0524[19]: parameter number

Dependency: Refer to: p0514

p0530[0...n] Bearing version selection / Bearing vers sel

PM240			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS, p0130
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	104	0

Description: Sets the bearing version.

Corresponding to the bearing version entered, its code number (p0531) is automatically set.

0 = No data

1 = Manual entry

101 = STANDARD

102 = PERFORMANCE

103 = HIGH PERFORMANCE

104 = ADVANCED LIFETIME

Dependency: Refer to: p0301, p0531, p0532, p1082

Notice: For p0530 = 101, 102, 103, 104, the maximum bearing speed (p0532) is write protected. Write protection is withdrawn with p0530 = 1.

If p0530 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3). The maximum speed of the bearing is factored into the limit for the maximum speed p1082.

Note: For a motor with DRIVE-CLiQ, p0530 can only be set to 1.

p0531[0...n] Bearing code number selection / Bearing codeNo sel

PM240			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: C(3)	**Scaling:** -	**Dyn. index:** MDS, p0130
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	65535	0

Description: Display and setting the code number of the bearing.

When setting p0301 and p0530 the code number is automatically pre-assigned and is write protected. The information in p0530 should be observed when removing write protection.

Dependency: Refer to: p0301, p0530, p0532, p1082

Notice: If p0531 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3). The maximum speed of the bearing is factored into the limit for the maximum speed p1082.

Note: p0531 cannot be changed on a motor with DRIVE-CLiQ.

p0532[0...n] Bearing maximum speed / Bearing n_max

PM240			
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: C(1, 3)	**Scaling:** -	**Dyn. index:** MDS, p0130
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0.0 [rpm]	210000.0 [rpm]	0.0 [rpm]

Description: Sets the maximum speed of the bearing.

The following applies when calculating the maximum speed (p1082):

- for p0324 = 0 or p0532 = 0, p0322 is used.

- for p0324 > 0 and p0532 > 0, the minimum value from the two parameters is used.

Dependency: Refer to: p0301, p0322, p0530, p1082

Notice: This parameter is pre-assigned in the case of motors from the motor list (p0301) if a bearing version (p0530) is selected.

When selecting a catalog motor, this parameter cannot be changed (write protection). The information in p0530 should be observed when removing write protection.

If p0532 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3).

p0573 Inhibit automatic reference value calculation / Inhibit calc

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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).

Value:
0: No
1: Yes

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

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

Note: If value = 0:

The automatic calculation (p0340, p3900) overwrites the reference parameters.

If value = 1:

The automatic calculation (p0340, p3900) does not overwrite the reference parameters.

p0595 Technological unit selection / Tech unit select

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(5)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
1	48	1

Description: Selects the units for the parameters of the technology controller.

For p0595 = 1, 2, the reference quantity set in p0596 is not active.

Value:
1: %
2: 1 referred no dimensions
3: bar
4: °C
5: Pa
6: ltr/s
7: m³/s
8: ltr/min
9: m³/min
10: ltr/h
11: m³/h
12: kg/s
13: kg/min
14: kg/h
15: t/min
16: t/h
17: N
18: kN
19: Nm
20: psi
21: °F
22: gallon/s
23: inch³/s
24: gallon/min

25: inch³/min
26: gallon/h
27: inch³/h
28: lb/s
29: lb/min
30: lb/h
31: lbf
32: lbf ft
33: K
34: rpm
35: parts/min
36: m/s
37: ft³/s
38: ft³/min
39: BTU/min
40: BTU/h
41: mbar
42: inch wg
43: ft wg
44: m wg
45: % r.h.
46: g/kg
47: ppm
48: kg/cm²

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

p0596 Technological unit reference quantity / Tech unit ref qty

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

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

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 8016
Min	**Max**	**Factory setting**
0	6	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
6: PT1000

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

Caution: For p0601 = 2, 6:

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: For p0601 = 1:

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

p0604[0...n] Mot_temp_mod 2/sensor alarm threshold / Mod 2/sens A_thr

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8016
Min	**Max**	**Factory setting**
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/PT1000.

Alarm A07910 is output after the alarm threshold is exceeded.

Dependency: Refer to: p0612

Refer to: F07011, A07910

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/sensor threshold and temperature value / Mod1/2/sens T_thr

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8016, 8017
Min	**Max**	**Factory setting**
0.0 [°C]	240.0 [°C]	145.0 [°C]

Description: Sets the threshold and temperature value to monitor the motor temperature.

Temperature model 1 (I2t, p0612.0 = 1):

The following applies for firmware version < 4.7 SP6 or p0612.8 = 0:

- sets the alarm threshold. If the model temperature (r0034) exceeds the alarm threshold, then alarm A07012 is output.

- this value is simultaneously used as rated winding temperature.

The following applies from firmware version 4.7 SP6 and p0612.8 = 1:

- p5390: when commissioning a catalog motor for the first time, p0605 is copied to p5390.

- p5390: p5390 is of significance when evaluating the alarm threshold.

- p5390: the stator winding temperature (r0632) is used to initiate the signal.

- p0627: when a catalog motor is commissioned for the first time, p0605 -40 °C is copied to p0627.

- p0627: p0627 is of significance for the rated temperature.

Motor temperature model 2 (p0612.1 = 1) or measurement:

- sets the fault threshold. If the temperature (r0035) exceeds the fault threshold, then fault F07011 is output.

Dependency: Refer to: r0034, p0611, p0612

Refer to: F07011, A07012

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 (I2t):

The following applies for firmware version < 4.7 SP6 or p0612.8 = 0:

p0605 also defines the final 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 p0318. For p0318 = 0, the rated motor current is used as reference value.

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).

p0610[0...n] Motor overtemperature response / Mot temp response

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 8016, 8017, 8018
Min	**Max**	**Factory setting**
0	12	12

Description: Sets the system response when the motor temperature reaches the alarm threshold.

Value:
0: No response only alarm no reduction of I_max
1: Messages, reduction of I_max
2: Messages, no reduction of I_max
12: Messages, no reduction of I_max, temperature storage

Dependency: Refer to: p0601, p0604, p0605, p0614, p0615

Refer to: F07011, A07012, A07910

Note: The I_max reduction is not executed for PTC (p0601 = 1) or bimetallic NC contact (p0601 = 4).

The I_max reduction results in a lower output frequency.

If value = 0:

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 KTY/PT1000, 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.

p0611[0...n] I2t motor model thermal time constant / I2t mot_mod T

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1, 3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 8017
Min	**Max**	**Factory setting**
0 [s]	20000 [s]	0 [s]

Description: Sets the winding time constant.

The time constant specifies the warm-up time of the cold stator winding when loaded with the motor standstill current (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.

Dependency: The parameter is only used for synchronous motors (p0300 = 2xx, 4) and synchronous reluctance motors (p0300 = 6xx).

Refer to: r0034, p0612, p0615

Refer to: F07011, A07012, A07910

Notice: 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 pre-assigned to a value that matches the motor power, if a temperature sensor was not parameterized (see p0601).

Note: 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.

p0612[0...n] Mot_temp_mod activation / Mot_temp_mod act

Access level: 2	**Calculated:** p0340 = 1	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** 8017, 8018
Min	**Max**	**Factory setting**
-	-	0000 0010 0000 0010 bin

Description: Setting to activate the motor temperature model.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Activate mot_temp_mod 1 (I2t)	Yes	No	-
01	Activate mot_temp_mod 2	Yes	No	-
08	Activate mot_temp_mod 1 (I2t) extensions	Yes	No	-
09	Activate mot_temp_mod 2 extensions	Yes	No	-
12	Mot_temp_mod 1 (I2t) ambient temperature can be adjusted	Yes (via p0613)	No (fixed 20 °C)	-

Dependency: For synchronous motors and synchronous reluctance 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, p0613, p0615, p0625, p0626, p0627, p0628, r0630, r0631, r0632, r0633, p5350, r5389, p5390, p5391

Refer to: F07011, A07012, A07014, A07910

Notice: For bit 00:

This bit is only automatically activated for permanent-magnet 1FT7 synchronous motors and synchronous reluctance motors. For other permanent-magnet synchronous motors, the user himself must activate motor temperature model 1 (I2t).

It is only possible to activate this motor temperature model (I2t) for a time constant greater than zero (p0611 > 0).

Note: Mot_temp_mod: motor temperature model

For bit 00:

This bit is used to activate/deactivate the motor temperature model for permanent-magnet synchronous motors and synchronous reluctance motors.

For bit 01 (see also bit 9):

This bit is used to activate/deactivate the motor temperature model for induction motors.

For bit 08:

This bit is used to extend the motor temperature model 1 (I2t).

The following applies for firmware version < 4.7 SP6 (only bit 0):

- this bit has no function. Temperature model 1 operates in the standard mode.

Overtemperature at rated load: p0605 - 40 °C

Alarm threshold: p0605

Fault threshold: p0615

The following applies from firmware version 4.7 SP6 (bits 0 and 8):

- temperature model 1 operates in the extended mode.

Overtemperature at rated load: p0627

Alarm threshold: p5390

Fault threshold: p5391

For bit 09:

This bit is used to extend the motor temperature model 2.

For firmware version < 4.7 following applies (only bit 1):

- this bit has no function. Temperature model 2 operates in the standard mode.

From firmware version 4.7 the following applies (bits 1 and 9):

- this bit should be set. Temperature model 2 then operates in the extended mode and the result of the model is more precise.

For bit 12 (only effective if a temperature sensor has not been parameterized):

This bit is used to set the ambient temperature for the motor temperature model 1 (I2t).

The following applies for firmware version < 4.7 SP6 (only bit 0):

- this bit has no function. Temperature model 1 operates with an ambient temperature of 20 °C.

The following applies from firmware version 4.7 SP6 (bits 0 and 12):

- the ambient temperature can be adapted to the conditions using p0613.

p0613[0...n] Mot_temp_mod 1/3 ambient temperature / Mod 1/3 amb_temp

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8017
Min	**Max**	**Factory setting**
-40 [°C]	100 [°C]	20 [°C]

Description: Sets the ambient temperature for motor temperature model 1 or 3.
- temperature model 1 (I2t, p0612.0 = 1):
For firmware version < 4.7 SP6 or p0612.12 = 0, the following applies:
The parameter is not relevant.
From firmware version 4.7 SP6 and p0612.12 = 1, the following applies:
The parameter defines the current ambient temperature.
- temperature model 3 (p0612.2 = 1):
The parameter defines the current ambient temperature.

Dependency: Refer to: p0612
Refer to: F07011, A07012

p0614[0...n] Thermal resistance adaptation reduction factor / Therm R_adapt red

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [%]	100 [%]	30 [%]

Description: 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.

Dependency: Refer to: p0610

Note: The reduction factor is only effective for p0610 = 12, and refers to the overtemperature.

p0615[0...n] Mot_temp_mod 1 (I2t) fault threshold / I2t F thresh

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8017
Min	**Max**	**Factory setting**
0.0 [°C]	220.0 [°C]	180.0 [°C]

Description: Sets the fault threshold for monitoring the motor temperature for motor temperature model 1 (I2t).
The following applies for firmware version < 4.7 SP6:
- fault F07011 is output after the fault threshold is exceeded.
- fault threshold for r0034 = 100 % * (p0615 - 40) / (p0605 - 40).
The following applies from firmware version 4.7 SP6 and p0612.8 = 1:
- the fault threshold in p0615 is preset when commissioning.
- when a catalog motor with motor temperature model 1 (I2t) is being commissioned for the first time, the threshold value is copied from p0615 to p5391.
- p5391 is of significance for evaluating the fault threshold.

Dependency: The parameter is only used for motor temperature model 1 (I2t).
Refer to: r0034, p0611, p0612
Refer to: F07011, A07012

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.

p0620[0...n] Thermal adaptation, stator and rotor resistance / Mot therm_adapt R

Access level: 4	**Calculated:** p0340 = 1	**Data type:** Integer16
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	2	1

Description: Sets the thermal adaptation of the stator/primary section resistance and rotor/secondary section resistance according to r0395 and r0396.

Value:
0: No thermal adaptation of stator and rotor resistances
1: Resistances adapted to the temperatures of the thermal model
2: Resistances adapted to the measured stator winding temperature

Note: For p0620 = 1, the following applies:

The stator resistance is adapted using the temperature in r0035 and the rotor resistance together with the model temperature in r0633.

For p0620 = 2, the following applies:

The stator resistance is adapted using the temperature in r0035. If applicable, the rotor temperature for adapting the rotor resistance is calculated from the stator temperature (r0035) as follows:

theta_R = (r0628 + r0625) / (r0627 + r0625) * r0035

p0621[0...n] Identification stator resistance after restart / Rst_ident Restart

PM230
PM240
PM250, PM260

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	2	0

Description: Selects the identification of the stator resistance of induction motors after the Control Unit runs-up (only for vector control).

The identification is used to measure the actual stator resistance and from the ratio of the result of motor data identification (p0350) to the matching ambient temperature (p0625) the actual mean temperature of the stator winding is calculated. The result is used to initialize the thermal motor model.

p0621 = 1:

Identification of the stator resistance only when the drive is switched on for the first time (pulse enable) after booting the Control Unit.

p0621 = 2:

Identification of the stator resistance every time the drive is switched on (pulse enable).

Value:
0: No Rs identification
1: Rs identification after switching-on again
2: Rs identification after switching-on each time

Dependency: - perform motor data identification (see p1910) with cold motor.

- enter ambient temperature at time of motor data identification in p0625.

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0622, r0623

Notice: The determined stator temperature of the induction motor can only be compared with the measured value of a temperature sensor (KTY/PT1000) to a certain extent, as the sensor is usually the warmest point of the stator winding, whereas the measured value of identification reflects the mean value of the stator winding.

Furthermore this is a short-time measurement with limited accuracy that is performed during the magnetizing phase of the induction motor.

Note: The measurement is carried out:

- For induction motors
- When vector control is active (see p1300)
- if a temperature sensor (KTY/PT1000) 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.

p0621[0...n] Identification stator resistance after restart / Rst_ident Restart

PM330			
	Access level: 2	**Calculated:** -	**Data type:** Integer16
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** MDS, p0130
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	2	0

Description: Selects the identification of the stator resistance of induction motors after the Control Unit runs-up (only for vector control).

The identification is used to measure the actual stator resistance and from the ratio of the result of motor data identification (p0350) to the matching ambient temperature (p0625) the actual mean temperature of the stator winding is calculated. The result is used to initialize the thermal motor model.

p0621 = 1:

Identification of the stator resistance only when the drive is switched on for the first time (pulse enable) after booting the Control Unit.

p0621 = 2:

Identification of the stator resistance every time the drive is switched on (pulse enable).

If a reference value for the stator resistance at an ambient temperature is entered into p0629, then the setting value for the stator temperature is generated from this value and not from p0350.

When activating the measurement (p0621 = 1, 2), p0629 is determined when first starting the drive. p0629 should be saved for subsequent use. In order that p0629 matches the ambient temperature (p0625), the function should be activated with the motor in the cold condition.

Value:
0: No Rs identification
1: Rs identification after switching-on again
2: Rs identification after switching-on each time

Dependency: - perform motor data identification (see p1910) with cold motor.

- enter ambient temperature at time of motor data identification in p0625.

- Reference stator resistance p0629 saved after it has been determined.

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0622, r0623, p0629

Notice: The calculated stator temperature can only be compared with the measured value of a temperature sensor (KTY/PT1000) 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. The accuracy depends very heavily on how precisely the motor feeder cable resistance is known (see p0352).

The accuracy of the measurement can be improved by entering the feeder cable resistance p0352 and by determining the reference stator resistance p0629 for the ambient temperature. p0629 is the measured value r0623, which was determined immediately after the first commissioning with the motor in a cold state. For p0621 = 1, p0629 is also measured when switching on for the first time and not after the Control Unit has switched on.

Note: The measurement is carried out:

- For induction motors

- When vector control is active (see p1300)

- if a temperature sensor (KTY/PT1000) has not been connected

- When the motor is at a standstill when switched on

When a flying restart is performed on a rotating motor, the temperatures of the thermal motor model are set to a third of the overtemperatures. This occurs only once, however, when the CU is booted (e.g. after a power failure).

If identification is activated, the magnetizing time is determined via p0622 and not via p0346. Quick magnetizing (p1401.6) is de-energized internally and alarm A07416 is displayed. The speed is enabled after completion of the measurement.

p0622[0...n] Motor excitation time for Rs_ident after switching on again / t_excit Rs_id

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	20.000 [s]	0.000 [s]

Description: Sets the excitation time of the motor for the stator resistance identification after switching on again (restart).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0621, r0623

Note: For p0622 < p0346 the following applies:

If identification is activated, the magnetizing time is influenced by p0622. The speed is enabled after measurement is complete, but not before the time in p0346 has elapsed (see r0056 bit 4). The time taken for measurement also depends on the settling time of the measured current.

For p0622 >= p0346 the following applies:

Parameter p0622 is internally limited to the magnetizing time p0346, so that p0346 represents the maximum possible magnetizing time during identification. The entire measurement period (magnetizing plus measurement settling time plus measuring time) will always be greater than p0346.

r0623 Rs identification stator resistance after switch on again / Rs-id Rs aft sw-on

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the stator resistance determined using the Rs identification after switching on again.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0621, p0622

p0625[0...n] Motor ambient temperature during commissioning / Mot T_ambient

Access level: 3	**Calculated:** p0340 = 1,2	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8017, 8018
Min	**Max**	**Factory setting**
-40 [°C]	80 [°C]	20 [°C]

Description: Defines the ambient temperature of the motor for calculating the motor temperature model.

Dependency: Refer to: p0350, p0354

Note: The parameters for stator and rotor resistance (p0350, p0354) refer to this temperature.

If the thermal I2t motor model is activated for permanent-magnet synchronous motors (refer to p0611), p0625 is included in the model calculation if a temperature sensor is not being used (see p0601).

p0626[0...n] Motor overtemperature, stator core / Mot T_over core

Access level: 4	**Calculated:** p0340 = 1,2	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: 21_2	**Unit selection:** p0505	**Func. diagram:** 8018
Min	**Max**	**Factory setting**
10 [K]	200 [K]	50 [K]

Description: Defines the rated overtemperature of the stator iron referred to ambient temperature in the motor temperature model 2 (p0612.1 = 1).

Dependency: For 1LA7 motors (p0300), the parameter is pre-set as a function of p0307 and p0311.

Refer to: p0625

Notice: When selecting a standard induction motor listed in the catalog (p0300 > 100, p0301 > 10000), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

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

p0627[0...n] Motor overtemperature, stator winding / Mot T_over stator

Access level: 2	**Calculated:** p0340 = 1,2	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: 21_2	**Unit selection:** p0505	**Func. diagram:** 8017, 8018
Min	**Max**	**Factory setting**
15 [K]	200 [K]	80 [K]

Description: Defines the rated overtemperature of the stator winding referred to the ambient temperature.

- motor temperature model 1 (I2t, p0612.0 = 1):

The following applies for firmware version < 4.7 SP6 or p0612.8 = 0:

p0605 is of significance for the rated temperature.

The following applies from firmware version 4.7 SP6 and p0612.8 = 1:

Overtemperature at the rated operating point.

- motor temperature model 2 (p0612.1 = 1):

Overtemperature at the rated operating point.

Dependency: For 1LA5 and 1LA7 motors (p0300 = 15, 17), the parameter is pre-set as a function of p0307 and p0311.

Refer to: p0625

Notice: When selecting a standard induction motor listed in the catalog (p0300 > 100, p0301 > 10000), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

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

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

p0628[0...n] Motor overtemperature rotor / Mot T_over rotor

Access level: 4	**Calculated:** p0340 = 1,2	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: 21_2	**Unit selection:** p0505	**Func. diagram:** 8018
Min	**Max**	**Factory setting**
20 [K]	200 [K]	100 [K]

Description: Defines the rated overtemperature of the squirrel cage rotor referred to ambient temperature in the motor temperature model 2 (p0612.1 = 1).

Dependency: For 1LA7 motors (p0300), the parameter is pre-set as a function of p0307 and p0311.

Refer to: p0625

Notice: When selecting a standard induction motor listed in the catalog (p0300 > 100, p0301 > 10000), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

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

p0629[0...n] Stator resistance reference / R_stator ref

PM330

Access level: 3	**Calculated:** p0340 = 1,2	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00000 [ohm]	2000.00000 [ohm]	0.00000 [ohm]

Description: Reference value for the identification of the stator resistance every time the drive is switched on.

Dependency: The measurement of the reference value is activated by the automatic calculation (p0340 = 1, 2), if the following conditions apply:

- the motor temperature is at this instant in time less than 30 °C (r0035).
- a temperature sensor is not being used (p0601).

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0621, r0623

Note: The reference value to identify the stator resistance is determined at the first identification. This must be realized when the motor is in a cold state, as the value refers to the ambient temperature p0625. The feeder cable resistance should be entered into p0352 before the measurement.

The result must be saved after the first measurement so that the reference is available after the CU has powered up. When changing p0350 or p0352, the reference value p0629 should be re-determined.

r0630[0...n] Mot_temp_mod ambient temperature / Mod T_ambient

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2006	**Dyn. index:** MDS
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8018
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the ambient temperature of the motor temperature model (models 2 and 3).

r0631[0...n] Mot_temp_mod stator iron temperature / Mod T_stator

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2006	**Dyn. index:** MDS
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8018
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the stator iron temperature of the motor temperature model (models 2 and 3).

Note: For motor temperature model 1 (p0612.0 = 1), this parameter is not valid:

r0632[0...n] Mot_temp_mod stator winding temperature / Mod T_winding

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2006	**Dyn. index:** MDS
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8017, 8018
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the stator winding temperature of the motor temperature model.

Dependency: Refer to: F07011, A07012, A07910

r0633[0...n] Mot_temp_mod rotor temperature / Mod rotor temp

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2006	**Dyn. index:** MDS
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8018
Min	**Max**	**Factory setting**
- [°C]	- [°C]	- [°C]

Description: Displays the rotor temperature of the motor temperature model (models 2 and 3).

Note: For motor temperature model 1 (p0612.0 = 1), this parameter is not valid:

p0640[0...n] Current limit / Current limit

Access level: 2	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: C(1, 3), U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6640, 6828
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the current limit.

Dependency: Refer to: r0209, p0323

Note: The parameter is part of the quick commissioning (p0010 = 1); this means that it is appropriately pre-assigned when changing p0305. The current limit p0640 is limited to r0209.

The resulting current limit is displayed in r0067 and if required, r0067 is reduced by the thermal model of the power unit.

The torque and power limits (p1520, p1521, p1530, p1531) matching the current limit are automatically calculated when exiting the quick commissioning using p3900 > 0 or using the automatic parameterization with p0340 = 3, 5.

p0640 is limited to 4.0 x p0305.

p0640 is pre-assigned for the automatic self commissioning routine (e.g. to 1.5 x p0305, with p0305 = r0207[1]).

p0640 must be entered when commissioning the system. This is the reason that p0640 is not calculated by the automatic parameterization when exiting the quick commissioning (p3900 > 0).

p0641[0...n] CI: Current limit, variable / Curr lim var

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 6640
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the variable current limit.

The value is referred to p0640.

p0644[0...n] Current limit excitation induction motor / Imax excitat ASM

PM330

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C, U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
50.0 [%]	300.0 [%]	300.0 [%]

Description: Maximum excitation current of the induction motor referred to the permissible rated current of the power unit (r0207[0]).

Dependency: Only effective for vector control.

Note: The parameter is pre-assigned in the automatic calculation for chassis power units.

p0650[0...n] Actual motor operating hours / Oper hours motor

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [h]	4294967295 [h]	0 [h]

Description: Displays the operating hours for the corresponding motor.

The motor operating time counter continues to run when the pulses are enabled. When the pulse enable is withdrawn, the counter is held and the value saved.

Dependency: Refer to: p0651

Refer to: A01590

Note: For p0651 = 0, the operating hours counter is disabled.

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).

p0651[0...n] Motor operating hours maintenance interval / Mot t_op maint

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [h]	150000 [h]	0 [h]

Description: Sets the service/maintenance intervals in hours for the appropriate motor.

An appropriate message is output when the operating hours set here are reached.

Dependency: Refer to: p0650

Refer to: A01590

Note: For p0651 = 0, the operating hours counter is disabled.

When setting p0651 to 0, then p0650 is automatically set to 0.

The operating hours counter only runs with drive data set 0 and 1 (DDS).

r0720[0...4] CU number of inputs and outputs / CU I/O count

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2119
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of inputs and outputs.

Index:
[0] = Number of digital inputs
[1] = Number of digital outputs
[2] = Number of digital input/outputs bidirectional
[3] = Number of analog inputs
[4] = Number of analog outputs

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

Access level: 2	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2201, 2221, 2256
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual value at the digital inputs.

This means that the actual input signal can be checked at terminal DI x or DI/DO x prior to switching from the simulation mode (p0795.x = 1) to terminal mode (p0795.x = 0).

Bit field:

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

Note: AI: Analog Input

DI: Digital Input

T: Terminal

r0722.0...12 CO/BO: CU digital inputs status / CU DI status

Access level: 2	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2201, 2221, 2256
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of the digital inputs.

Bit field:

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

Dependency: Refer to: r0723

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

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2119, 2120, 2121, 2130, 2131, 2132, 2133
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the inverted status of the digital inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (T. 5)	High	Low	-
01	DI 1 (T. 6)	High	Low	-
02	DI 2 (T. 7)	High	Low	-
03	DI 3 (T. 8)	High	Low	-
04	DI 4 (T. 16)	High	Low	-
05	DI 5 (T. 17)	High	Low	-
11	DI 11 (T. 3, 4) 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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [ms]	20.000 [ms]	4.000 [ms]

Description: Sets the debounce time for digital inputs.

Note: The digital inputs are read in cyclically every 2 ms (DI 11, DI 12 every 4 ms).
To debounce the signals, the set debounce time is converted into integer multiple debounce clock cycles Tp (Tp = p0724 / 2 ms).
DI: Digital Input

p0730 BI: CU signal source for terminal DO 0 / CU S_src DO 0

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

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

Recommendation: 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 I_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

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2119, 2030, 2130
Min	**Max**	**Factory setting**
-	-	52.7

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

Recommendation: 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 I_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

p0732 BI: CU signal source for terminal DO 2 / CU S_src DO 2

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2119, 2030, 2130
Min	**Max**	**Factory setting**
-	-	52.2

Description: Sets the signal source for terminal DO 2 (NO: T. 24 / NC: T. 23).

Recommendation: 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 I_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

r0747 CU digital outputs status / CU DO status

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2130, 2131, 2132, 2133
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of digital outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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.

p0748 CU invert digital outputs / CU DO inv

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2201, 2242
Min	**Max**	**Factory setting**
-	-	0000 bin

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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

r0751.0...11 BO: CU analog inputs status word / CU AI status word

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2251, 2252
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the status of the analog inputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Analog input AI0 wire breakage	Yes	No	-
01	Analog input AI1 wire breakage	Yes	No	-
02	Analog input AI2 wire breakage	Yes	No	-
03	Analog input AI3 wire breakage	Yes	No	-
08	Analog input AI0 no wire breakage	Yes	No	-
09	Analog input AI1 no wire breakage	Yes	No	-
10	Analog input AI2 no wire breakage	Yes	No	-
11	Analog input AI3 no wire breakage	Yes	No	-

Note: AI: Analog Input

r0752[0...3] CO: CU analog inputs input voltage/current actual / CU AI U/I_inp act

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p0514	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9566, 9568, 9576
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual input voltage in V when set as voltage input.

Displays the actual input current in mA when set as current input and with the load resistor switched in.

Displays the actual temperature in °C when set as temperature sensor and the voltage divider is switched in.

Index:
[0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

Dependency: The type of analog input AIx (voltage, current or temperature input) is set using p0756.

Refer to: p0756

Note: AI: Analog Input

T: Terminal

p0753[0...3] CU analog inputs smoothing time constant / CU AI T_smooth

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9566, 9568, 9576
Min	**Max**	**Factory setting**
0.0 [ms]	1000.0 [ms]	0.0 [ms]

Description: Sets the smoothing time constant of the 1st order lowpass filter for the analog inputs.

Index:
[0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

Note: AI: Analog Input

T: Terminal

r0755[0...3] CO: CU analog inputs actual value in percent / CU AI value in %

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9566, 9568, 9576
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the currently referred input value of the analog inputs.

When interconnected, the signals are referred to the reference quantities p200x and p205x.

Index:
[0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

Note: AI: Analog Input

T: Terminal

p0756[0...3] CU analog inputs type / CU AI type

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9566, 9568, 9576
Min	**Max**	**Factory setting**
0	10	[0] 4 [1] 4 [2] 2 [3] 8

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...2] = 2, 3 corresponds to a current input (r0752, p0757, p0759 are displayed in mA).

p0756[2...3] = 6, 7, 10 corresponds to a resistor input for temperature measurement (r0752, p0757, p0759 are displayed in °C).

p0756[2...3] = 8 No temperature sensor connected. Mode for deactivating sensor monitoring (alarm A03520).

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".

For the temperature input, DIP switch AI2 must be set to "TEMP".

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)
6: Temperature sensor LG-Ni1000
7: Temperature sensor PT1000
8: No sensor connected
10: Temperature sensor DIN Ni 1k (6180 ppm / K)

Index:
[0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

Dependency: Refer to: A03520

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 %.

For p0756 = 6, 7, p0757 is set to 0 °C, p0758 = 0.0 %, p0759 = 100 °C and p0760 = 100.0 %.

p0757[0...3] CU analog inputs characteristic value x1 / CU AI char x1

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9566, 9568, 9576
Min	**Max**	**Factory setting**
-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, °C) of the 1st value pair of the characteristic.

Index:
[0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

Note: The parameters for the characteristic do not have a limiting effect.

p0758[0...3] CU analog inputs characteristic value y1 / CU AI char y1

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9566, 9568, 9576
Min	**Max**	**Factory setting**
-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)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

Note: The parameters for the characteristic do not have a limiting effect.

p0759[0...3] CU analog inputs characteristic value x2 / CU AI char x2

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9566, 9568, 9576
Min	**Max**	**Factory setting**
-50.000	160.000	[0] 10.000 [1] 10.000 [2] 20.000 [3] 100.000

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, °C) of the 2nd value pair of the characteristic.

Index:
[0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

Note: The parameters for the characteristic do not have a limiting effect.

p0760[0...3] CU analog inputs characteristic value y2 / CU AI char y2

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9566, 9568, 9576
Min	**Max**	**Factory setting**
-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)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

Note: The parameters for the characteristic do not have a limiting effect.

p0761[0...3] CU analog inputs wire breakage monitoring response threshold / CU WireBrkThresh

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9566, 9568
Min	**Max**	**Factory setting**
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)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

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...2] = 3 (unipolar current input monitored (+4 mA ... +20 mA)), unit [mA]

p0756[3]: Wire breakage monitoring is not supported for this analog input.

Refer to: p0756

Note: AI: Analog Input

When p0761 = 0, wire breakage monitoring is not carried out.

p0762[0...3] CU analog inputs wire breakage monitoring delay time / CU wire brk t_del

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9566, 9568
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	100 [ms]

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

Index:
[0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

Note: AI: Analog Input

p0764[0...3] CU analog inputs dead zone / CU AI dead zone

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2251
Min	**Max**	**Factory setting**
0.000	20.000	0.000

Description: 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.

Index:
[0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

Note: AI: Analog Input

T: Terminal

p0771[0...2] CI: CU analog outputs signal source / CU AO S_src

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2261
Min	**Max**	**Factory setting**
-	-	[0] 21[0] [1] 27[0] [2] 0

Description: Sets the signal source for the analog outputs.

Index:
[0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)
[2] = Reserved

Note: AO: Analog Output

T: Terminal

r0772[0...2] CU analog outputs output value currently referred / CU AO outp act ref

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9572
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the actual referred output value of the analog outputs.

Index:
[0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)
[2] = Reserved

Note: AO: Analog Output

T: Terminal

p0773[0...2] CU analog outputs smoothing time constant / CU AO T_smooth

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9572
Min	**Max**	**Factory setting**
0.0 [ms]	1000.0 [ms]	0.0 [ms]

Description: Sets the smoothing time constant of the 1st order lowpass filter for the analog outputs.

Index:
[0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)
[2] = Reserved

Note: AO: Analog Output
T: Terminal

r0774[0...2] CU analog outputs output voltage/current actual / CU AO U/I_outp

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

Description: Displays the actual output voltage or output current at the analog outputs.

Index:
[0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)
[2] = Reserved

Dependency: Refer to: p0776

Note: AO: Analog Output
T: Terminal

p0775[0...2] CU analog outputs activate absolute value generation / CU AO absVal act

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9572
Min	**Max**	**Factory setting**
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)
[2] = Reserved

Note: AO: Analog Output
T: Terminal

p0776[0...2] CU analog outputs type / CU AO type

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9572
Min	**Max**	**Factory setting**
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)
[2] = Reserved

Note: When changing p0776, the parameters of the scaling characteristic (p0777, p0778, p0779, p0780) are overwritten with the following default values:

For p0776 = 0, p0777 is set to 0.0 %, p0778 = 0.0 mA, p0779 = 100.0 % and p0780 to 20.0 mA.

For p0776 = 1, p0777 is set to 0.0 %, p0778 = 0.0 V, p0779 = 100.0 % and p0780 to 10.0 V.

For p0776 = 2, p0777 is set to 0.0 %, p0778 = 4.0 mA, p0779 = 100.0 % and p0780 to 20.0 mA.

p0777[0...2] CU analog outputs characteristic value x1 / CU AO char x1

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9572
Min	**Max**	**Factory setting**
-1000.00 [%]	1000.00 [%]	0.00 [%]

Description: 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.

Index: [0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)
[2] = Reserved

Dependency: Refer to: p0776

Notice: This parameter is automatically overwritten when changing p0776 (type of analog outputs).

Note: The parameters for the characteristic do not have a limiting effect.

p0778[0...2] CU analog outputs characteristic value y1 / CU AO char y1

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9572
Min	**Max**	**Factory setting**
-20.000 [V]	20.000 [V]	0.000 [V]

Description: 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.

Index: [0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)
[2] = Reserved

Dependency: The unit of this parameter (V or mA) depends on the analog output type.

Refer to: p0776

Notice: This parameter is automatically overwritten when changing p0776 (type of analog outputs).

Note: The parameters for the characteristic do not have a limiting effect.

p0779[0...2] CU analog outputs characteristic value x2 / CU AO char x2

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9572
Min	**Max**	**Factory setting**
-1000.00 [%]	1000.00 [%]	100.00 [%]

Description: 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.

Index: [0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)
[2] = Reserved

Dependency: Refer to: p0776

Notice: This parameter is automatically overwritten when changing p0776 (type of analog outputs).

Note: The parameters for the characteristic do not have a limiting effect.

p0780[0...2] CU analog outputs characteristic value y2 / CU AO char y2

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9572
Min	**Max**	**Factory setting**
-20.000 [V]	20.000 [V]	20.000 [V]

Description: 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.

Index:
[0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)
[2] = Reserved

Dependency: The unit of this parameter (V or mA) depends on the analog output type.

Refer to: p0776

Notice: This parameter is automatically overwritten when changing p0776 (type of analog outputs).

Note: The parameters for the characteristic do not have a limiting effect.

p0782[0...2] BI: CU analog outputs invert signal source / CU AO inv S_src

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9572
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to invert the analog output signals.

Index:
[0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)
[2] = Reserved

Note: AO: Analog Output

T: Terminal

r0785.0...1 BO: CU analog outputs status word / CU AO ZSW

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9572
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status of analog outputs.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	AO 0 negative	Yes	No	-
01	AO 1 negative	Yes	No	-

Note: AO: Analog Output

p0791[0...1] CO: Fieldbus analog outputs / Fieldbus AO

CU230P-2_HVAC
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-200.000 [%]	200.000 [%]	0.000 [%]

Description: Setting and connector output to control the analog outputs via fieldbus.

Index:
[0] = AO0 (T 12/13)
[1] = AO1 (T 26/27)

Dependency: Refer to: p0771

Note: AO: Analog Output

The following interconnections must be established to control the analog outputs via fieldbus:

- AO 0: p0771[0] with p0791[0]
- AO 1: p0771[1] with p0791[1]

p0795 CU digital inputs simulation mode / CU DI simulation

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2201, 2221, 2256
Min	**Max**	**Factory setting**
-	-	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).

AI: Analog Input

DI: Digital Input

T: Terminal

p0796 CU digital inputs simulation mode setpoint / CU DI simul setp

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2201, 2221, 2256
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

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

Bit field:

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

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

p0797[0...3] CU analog inputs simulation mode / CU AI sim_mode

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

Description: Sets the simulation mode for the analog inputs.

Value:
0: Terminal evaluation for analog input x
1: Simulation for analog input x

Index:
[0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

Dependency: The setpoint for the input voltage is specified via p0798.

Refer to: p0798

Note: This parameter is not saved when data is backed up (p0971).

AI: Analog Input

p0798[0...3] CU analog inputs simulation mode setpoint / CU AI sim setp

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-50.000	2000.000	0.000

Description: Sets the setpoint for the input value in the simulation mode of the analog inputs.

Index:
[0] = AI0 (T. 3/4)
[1] = AI1 (T. 10/11)
[2] = AI2 (T. 50/51)
[3] = AI3 (T. 52/53)

Dependency: The simulation of an analog input is selected using p0797.

If AI x is parameterized as a voltage input (p0756), the setpoint is a voltage in V.

If AI x is parameterized as a current input (p0756), the setpoint is a current in mA.

Refer to: p0756, p0797

Note: This parameter is not saved when data is backed up (p0971).

AI: Analog Input

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

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	100	0

Description: Sets the number for data transfer of a parameter backup from/to memory card.

Transfer from memory card to device memory (p0804 = 1):

- sets the source of parameter backup (e.g. p0802 = 48 --> PS048xxx.ACX is the source).

Transfer from non-volatile device memory to memory card (p0804 = 2):

- sets the target of parameter backup (e.g. p0802 = 23 --> PS023xxx.ACX is the target).

Dependency: Refer to: p0803, p0804

Note: The volatile device memory is not influenced by data transfer.

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

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	30	0

Description: Sets the number for data transfer of a parameter backup from/to the non-volatile device memory.

Transfer from memory card to device memory (p0804 = 1):

- sets the target of the parameter backup (e.g. p0803 = 10 --> PS010xxx.ACX is the target).

Transfer from non-volatile device memory to memory card (p0804 = 2):

- sets the source of the parameter backup (e.g. p0803 = 11 --> PS011xxx.ACX is the source).

Value:
0: Source/target standard
10: Source/target with setting 10
11: Source/target with setting 11
12: Source/target with setting 12
30: Source/target with setting 30

Dependency: Refer to: p0802, p0804

Note: The volatile device memory is not influenced by data transfer.

p0804 Data transfer start / Data transf start

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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 non-volatile 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.

--> the parameter backup PS022xxx.ACX on the memory card can be used for data backup.

Example 2:

The parameter backup is to be transferred from the memory card to the non-volatile device memory with setting 22. The parameter backup is to be stored in the device memory as setting 10.

p0802 = 22 (parameter backup stored on memory card as source with setting 22)

p0803 = 10 (define parameter backup with setting 10 as target in the device memory)

p0804 = 1 (start data transfer from memory card to device memory)

--> PS022xxx.ACX is transferred from memory card to device memory and stored as PS010xxx.ACX.

--> this parameter backup can be loaded to the volatile device memory using p0010 = 30 and p0970 = 10.

--> to permanently save in the device memory and also on the memory card, this parameter backup should be saved using p0971 = 1.

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

Recommendation: When switching off/switching on, a possibly valid parameter backup is loaded to the memory card with setting 0. Therefore, we do not recommend parameter backup with setting 0 (p0803 = 0) in the non-volatile device memory.

Dependency: Refer to: p0802, p0803

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

Note: If a parameter backup with setting 0 is detected on the memory card when the Control Unit is switched on (PS000xxx.ACX), this is transferred automatically to the device memory.

When the memory card is inserted, a parameter backup with setting 0 (PS000xxx.ACX) is automatically written to the memory card when the parameters are saved in a non-volatile memory (e.g. by means of "Copy RAM to ROM").

Once the data has been successfully transferred, this parameter is automatically reset to 0. If an error occurs, the parameter is set to a value > 1000. Possible fault causes:

p0804 = 1001:

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

p0804 = 1002:

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

p0804 = 1003:

No memory card has been inserted.

p0804 Data transfer start / Data transf start

CU230P-2_HVAC	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
CU230P-2_CAN	**Can be changed:** T	**Scaling:** -	**Dyn. index:** -
CU230P-2_BT	**Unit group:** -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	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 non-volatile 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.

--> the parameter backup PS022xxx.ACX on the memory card can be used for data backup.

Example 2:

The parameter backup is to be transferred from the memory card to the non-volatile device memory with setting 22. The parameter backup is to be stored in the device memory as setting 10.

p0802 = 22 (parameter backup stored on memory card as source with setting 22)

p0803 = 10 (define parameter backup with setting 10 as target in the device memory)

p0804 = 1 (start data transfer from memory card to device memory)

--> PS022xxx.ACX is transferred from memory card to device memory and stored as PS010xxx.ACX.

--> this parameter backup can be loaded to the volatile device memory using p0010 = 30 and p0970 = 10.

--> to permanently save in the device memory and also on the memory card, this parameter backup should be saved using p0971 = 1.

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

Recommendation: When switching off/switching on, a possibly valid parameter backup is loaded to the memory card with setting 0. Therefore, we do not recommend parameter backup with setting 0 (p0803 = 0) in the non-volatile device memory.

Dependency: Refer to: p0802, p0803

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

Note: If a parameter backup with setting 0 is detected on the memory card when the Control Unit is switched on (PS000xxx.ACX), this is transferred automatically to the device memory.

When the memory card is inserted, a parameter backup with setting 0 (PS000xxx.ACX) is automatically written to the memory card when the parameters are saved in a non-volatile memory (e.g. by means of "Copy RAM to ROM").

Once the data has been successfully transferred, this parameter is automatically reset to 0. If an error occurs, the parameter is set to a value > 1000. Possible fault causes:

p0804 = 1001:

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

p0804 = 1002:

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

p0804 = 1003:

No memory card has been inserted.

p0806 BI: Inhibit master control / PcCtrl inhibit

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit 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.

r0807.0 BO: Master control active / PcCtrl active

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

Description: Displays what has the master control.

The drive can be controlled via the BICO interconnection or from external (e.g. the commissioning software).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Master control active	Yes	No	3030

Dependency: Refer to: p0806

Notice: The master control only influences control word 1 and speed setpoint 1. Other control word/setpoints can be transferred from another automation device.

Note: Bit 0 = 0: BICO interconnection active

Bit 0 = 1: Master control for PC/AOP

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

p0809[0...2] Copy Command Data Set CDS / Copy CDS

Access level: 2	**Calculated:** -	**Data type:** Unsigned8
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8560
Min	**Max**	**Factory setting**
0	3	0

Description: Copies one Command Data Set (CDS) into another.

Index: [0] = Source Command Data Set
[1] = Target Command Data Set
[2] = Start copying procedure

Dependency: Refer to: r3996

Notice: When the command data sets are copied, short-term communication interruptions may occur.

Note: 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.

p0810 BI: Command data set selection CDS bit 0 / CDS select., bit 0

CU230P-2_DP
CU230P-2_PN

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8560
Min	**Max**	**Factory setting**
-	-	722.3

Description: Sets the signal source to select the Command Data Set bit 0 (CDS bit 0).

Dependency: Refer to: r0050, p0811, r0836

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

Note: The Command Data Set selected using the binector inputs is displayed in r0836.

The currently effective command data set is displayed in r0050.

A Command Data Set can be copied using p0809.

p0810 BI: Command data set selection CDS bit 0 / CDS select., bit 0

CU230P-2_HVAC
CU230P-2_CAN
CU230P-2_BT

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8560
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select the Command Data Set bit 0 (CDS bit 0).

Dependency: Refer to: r0050, p0811, r0836

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

Note: The Command Data Set selected using the binector inputs is displayed in r0836.

The currently effective command data set is displayed in r0050.

A Command Data Set can be copied using p0809.

p0811	BI: Command data set selection CDS bit 1 / CDS select., bit 1		
	Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 8560
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source to select the Command Data Set bit 1 (CDS bit 1).

Dependency: Refer to: r0050, p0810, r0836

Note: The Command Data Set selected using the binector inputs is displayed in r0836.

The currently effective command data set is displayed in r0050.

A Command Data Set can be copied using p0809.

p0819[0...2]	Copy Drive Data Set DDS / Copy DDS		
	Access level: 2	**Calculated:** -	**Data type:** Unsigned8
	Can be changed: C(15)	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 8565
	Min	**Max**	**Factory setting**
	0	3	0

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

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

Dependency: Refer to: r3996

Notice: When the drive data sets are copied, short-term communication interruptions may occur.

Note: Procedure:

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

p0819[2] is automatically set to 0 when copying is completed.

p0820[0...n]	BI: Drive Data Set selection DDS bit 0 / DDS select., bit 0		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: C(15), T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 8565
	Min	**Max**	**Factory setting**
	-	-	0

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

Dependency: Refer to: r0051, p0826, r0837

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

p0821[0...n]	BI: Drive Data Set selection DDS bit 1 / DDS select., bit 1		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: C(15), T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 8565, 8570
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source to select the Drive Data Set, bit 1 (DDS, bit 1).

Dependency: Refer to: r0051, r0837

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

p0826[0...n] Motor changeover motor number / Mot_chng mot No.

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** MDS
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the freely assignable motor number for the drive data set changeover.

If the same motor is driven by different drive data sets, the same motor number must also be entered in these data sets.

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.

Note: 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).

r0835.2...8 CO/BO: Data set changeover status word / DDS_ZSW

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8575
Min	**Max**	**Factory setting**
-	-	-

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Internal parameter calculation active	Yes	No	-
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	-

Note: For bit 02:

A data set changeover is delayed by the time required for the internal parameter calculation.

For bit 04:

A data set changeover is only carried out when the armature short circuit is not activated.

For bit 05:

A data set changeover is only carried out when pole position identification is not running.

For bit 07:

A data set changeover is only carried out when rotating measurement is not running.

For bit 08:

A data set changeover is only carried out when motor data identification is not running.

r0836.0...1 CO/BO: Command Data Set CDS selected / CDS selected

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

Description: Displays the command data set (CDS) selected via the binector input.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	CDS selection bit 0	ON	OFF	-
01	CDS selection bit 1	ON	OFF	-

Dependency: Refer to: r0050, p0810, p0811

Note: Command data sets are selected via binector input p0810 and following.

The currently effective command data set is displayed in r0050.

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8565
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the drive data set (DDS) selected via the binector input.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DDS selection bit 0	ON	OFF	-
01	DDS selection bit 1	ON	OFF	-

Dependency: Refer to: r0051, p0820, p0821

Note: Drive data sets are selected via binector input p0820 and following.

The currently effective drive data set is displayed in r0051.

If there is only one data set, then a value of 0 is displayed in this parameter and not the selection via binector inputs.

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

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2501, 2512
Min	**Max**	**Factory setting**
-	-	[0] 2090.0 [1] 0 [2] 0 [3] 0

Description: Sets the signal source for the command "ON/OFF (OFF1)".

For the PROFIdrive profile, this command corresponds to control word 1 bit 0 (STW1.0).

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

Dependency: Refer to: p1055, p1056

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

Notice: For binector input p0840 = 0 signal, the motor can be moved, jogging using binector input p1055 or p1056.

The command "ON/OFF (OFF1)" can be issued using binector input p0840 or p1055/p1056.

For binector input p0840 = 0 signal, the switching on inhibited is acknowledged.

Only the signal source that originally switched on can also switch off again.

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

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

CU230P-2_HVAC
CU230P-2_CAN
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2501, 2512
Min	**Max**	**Factory setting**
-	-	[0] 722.0 [1] 0 [2] 0 [3] 0

Description: Sets the signal source for the command "ON/OFF (OFF1)".

For the PROFIdrive profile, this command corresponds to control word 1 bit 0 (STW1.0).

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

Dependency: Refer to: p1055, p1056

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

Notice: For binector input p0840 = 0 signal, the motor can be moved, jogging using binector input p1055 or p1056.
The command "ON/OFF (OFF1)" can be issued using binector input p0840 or p1055/p1056.
For binector input p0840 = 0 signal, the switching on inhibited is acknowledged.
Only the signal source that originally switched on can also switch off again.
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

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2501, 8720, 8820, 8920
Min	**Max**	**Factory setting**
-	-	[0] 2090.1 [1] 1 [2] 2090.1 [3] 2090.1

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 switching on inhibited)
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

CU230P-2_HVAC
CU230P-2_CAN
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2501, 8720, 8820, 8920
Min	**Max**	**Factory setting**
-	-	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 switching on inhibited)
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

PM230	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
PM240	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
PM250, PM260	**Unit group:** -	**Unit selection:** -	**Func. diagram:** 2501, 8720, 8820, 8920
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the second signal source for the command "No coast down/coast down (OFF2)".

The following signals are AND'ed:

- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"
- BI: p0845 "No coast-down / coast-down (OFF2) signal source 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).

BI: p0844 = 0 signal or BI: p0845 = 0 signal

- OFF2 (immediate pulse suppression and switching on inhibited)

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.

p0845[0...n] BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2

PM330	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2501, 8720, 8820, 8920
	Min	**Max**	**Factory setting**
	-	-	4022.3

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 switching on inhibited)

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

CU230P-2_DP	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU230P-2_PN	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
	Min	**Max**	**Factory setting**
	-	-	[0] 2090.2 [1] 1 [2] 2090.2 [3] 2090.2

Description: Sets the first signal source for the command "No quick stop/quick stop (OFF3)".

The following signals are AND'ed:

- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).

BI: p0848 = 0 signal or BI: p0849 = 0 signal
- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switching on inhibited)
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.

p0848[0...n] BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1

CU230P-2_HVAC
CU230P-2_CAN
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the first signal source for the command "No quick stop/quick stop (OFF3)".
The following signals are AND'ed:
- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).
BI: p0848 = 0 signal or BI: p0849 = 0 signal
- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switching on inhibited)
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.

p0849[0...n] BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2

PM230
PM240
PM250, PM260

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the second signal source for the command "No quick stop/quick stop (OFF3)".
The following signals are AND'ed:
- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).
BI: p0848 = 0 signal or BI: p0849 = 0 signal
- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switching on inhibited)
BI: p0848 = 1 signal and BI: p0849 = 1 signal
- no OFF3 (enable is possible)

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

p0849[0...n] BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2

PM330			
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
	Min	**Max**	**Factory setting**
	-	-	4022.2

Description: Sets the second signal source for the command "No quick stop/quick stop (OFF3)".
The following signals are AND'ed:
- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).
BI: p0848 = 0 signal or BI: p0849 = 0 signal
- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switching on inhibited)
BI: p0848 = 1 signal and BI: p0849 = 1 signal
- no OFF3 (enable is possible)

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

p0852[0...n] BI: Enable operation/inhibit operation / Enable operation

CU230P-2_DP CU230P-2_PN			
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
	Min	**Max**	**Factory setting**
	-	-	[0] 2090.3 [1] 1 [2] 2090.3 [3] 2090.3

Description: Sets the signal source for the command "enable operation/inhibit operation".
For the PROFIdrive profile, this command corresponds to control word 1 bit 3 (STW1.3).
BI: p0852 = 0 signal
Inhibit operation (suppress pulses).
BI: p0852 = 1 signal
Enable operation (pulses can be enabled).

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

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

p0852[0...n] BI: Enable operation/inhibit operation / Enable operation

CU230P-2_HVAC CU230P-2_CAN CU230P-2_BT			
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for the command "enable operation/inhibit operation".
For the PROFIdrive profile, this command corresponds to control word 1 bit 3 (STW1.3).
BI: p0852 = 0 signal
Inhibit operation (suppress pulses).
BI: p0852 = 1 signal
Enable operation (pulses can be enabled).

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

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

p0854[0...n] BI: Control by PLC/no control by PLC / Master ctrl by PLC

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
Min	**Max**	**Factory setting**
-	-	[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

CU230P-2_HVAC
CU230P-2_CAN
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
Min	**Max**	**Factory setting**
-	-	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).

p0857 Power unit monitoring time / PU t_monit

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8760, 8864, 8964
Min	**Max**	**Factory setting**
100.0 [ms]	60000.0 [ms]	10000.0 [ms]

Description: 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.

Dependency: Refer to: F07802, F30027

Notice: The maximum time to precharge the DC link is monitored in the power unit and cannot be changed. The maximum precharging duration depends on the power unit.

The monitoring time for the precharging is started after the ON command (BI: p0840 = 0/1 signal). Fault F30027 is output when the maximum precharging duration is exceeded.

Note: 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 precharge 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.

p0860 BI: Line contactor feedback signal / Line contact feedb

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2634
Min	**Max**	**Factory setting**
-	-	863.1

Description: Sets the signal source for the feedback signal from the line contactor.

Recommendation: When the monitoring is activated (BI: p0860 not equal to r0863.1), then to control the line contactor, signal BO: r0863.1 of its own drive object should be used.

Dependency: Refer to: p0861, r0863

Refer to: F07300

Notice: The line contactor monitoring is deactivated 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).

Note: 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.

p0861 Line contactor monitoring time / LineContact t_mon

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2634
Min	**Max**	**Factory setting**
0 [ms]	5000 [ms]	100 [ms]

Description: 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.

Dependency: Refer to: p0860, r0863

Refer to: F07300

Note: The monitoring function is disabled for the factory setting of p0860.

r0863.0...1 CO/BO: Drive coupling status word/control word / CoupleZSW/STW

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word and control word of the drive coupling.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Closed-loop control operation	Yes	No	-
01	Energize contactor	Yes	No	2634

Note: For bit 01:

Bit 1 is used to control an external line contactor.

p0867 Power unit main contactor holding time after OFF1 / PU t_MC after OFF1

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [ms]	500.0 [ms]	50.0 [ms]

Description: Sets the main contactor holding time after OFF1

Dependency: Refer to: p0869

Note: After withdrawing the OFF1 enable (source of p0840), the main contactor is opened after the main contactor holding time has elapsed.

For p0869 = 1 (keep main contactor closed for STO), after withdrawing STO, the switching on inhibited 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.

p0868 Power unit thyristor rectifier wait time / PU thy_rect t

PM330

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [ms]	65000 [ms]	0 [ms]

Description: Sets the debounce time for the DC circuit breaker for power units in the "chassis" format.

Note: The following applies if p0868 = 65000 ms:

The debounce time defined internally in the power unit's EEPROM is implemented.

p0869 Sequence control configuration / Seq_ctrl config

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the sequence control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Keep main contactor closed for STO	Yes	No	-

Dependency: Refer to: p0867

Note: For 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 switching on inhibited 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.

p0870 BI: Close main contactor / Close main cont

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to close the main contactor.

Note: The main contactor is also closed when the converter is switched on after issuing the necessary enable signals. A binector input p0870 = 1 signal prevents the main contactor from being opened when enable signals are withdrawn.

r0898.0...10 CO/BO: Control word sequence control / STW seq_ctrl

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the control word of the sequence control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
02	OC / OFF3	Yes	No	-
03	Enable operation	Yes	No	-
04	Enable ramp-function generator	Yes	No	-
05	Continue ramp-function generator	Yes	No	-
06	Enable speed setpoint	Yes	No	-
08	Jog 1	Yes	No	3001
09	Jog 2	Yes	No	3001
10	Master control by PLC	Yes	No	-

Note: OC: Operating condition

r0899.0...11 CO/BO: Status word sequence control / ZSW seq_ctrl

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

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ready for switching 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	-

Note: For bits 00, 01, 02, 04, 05, 06, 09:

For PROFIdrive, these signals are used for status word 1.

p0918 PROFIBUS address / PB address

CU230P-2_DP

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2401, 2410
Min	**Max**	**Factory setting**
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.

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

p0922 PROFIdrive PZD telegram selection / PZD telegr_sel

CU230P-2_DP
CU230P-2_PN

Access level: 1	**Calculated:** -	**Data type:** Unsigned16
Can be changed: C(1), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2401, 2420
Min	**Max**	**Factory setting**
1	999	1

Description: Sets the send and receive telegram.

Value:
1: Standard telegram 1, PZD-2/2
20: Standard telegram 20, PZD-2/6
350: SIEMENS telegram 350, PZD-4/4
352: SIEMENS telegram 352, PZD-6/6
353: SIEMENS telegram 353, PZD-2/2, PKW-4/4
354: SIEMENS telegram 354, PZD-6/6, PKW-4/4
999: Free telegram configuration with BICO

Dependency: Refer to: p2038
Refer to: F01505

Note: 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.

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8060
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the counter for changes of the fault buffer.
This counter is incremented every time the fault buffer changes.

Recommendation: Used to check whether the fault buffer has been read out consistently.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8060
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the numbers of faults that have occurred.

Dependency: Refer to: r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3120, r3122

Notice: The properties of the fault buffer should be taken from the corresponding product documentation.

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
Fault buffer structure (general principle):
r0945[0], r0949[0], r0948[0], r2109[0] --> actual fault case, fault 1
. . .
r0945[7], r0949[7], r0948[7], r2109[7] --> actual fault case, fault 8

r0945[8], r0949[8], r0948[8], r2109[8] --> 1st acknowledged fault case, fault 1
. . .
r0945[15], r0949[15], r0948[15], r2109[15] --> 1st acknowledged fault case, fault 8
. . .
r0945[56], r0949[56], r0948[56], r2109[56] --> 7th acknowledged fault case, fault 1
. . .
r0945[63], r0949[63], r0948[63], r2109[63] --> 7th acknowledged fault case, fault 8

r0946[0...65534] Fault code list / Fault code list

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8060
Min	**Max**	**Factory setting**
-	-	-

Description: Lists the fault codes stored in the drive unit.
The indices can only be accessed with a valid fault code.

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

r0947[0...63] Fault number / Fault number

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8060
Min	**Max**	**Factory setting**
-	-	-

Description: This parameter is identical to r0945.

r0948[0...63] Fault time received in milliseconds / t_fault recv ms

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8060
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the system runtime in milliseconds when the fault occurred.

Dependency: Refer to: r0945, r0947, r0949, r2109, r2130, r2133, r2136, p8400

Notice: The time comprises r2130 (days) and r0948 (milliseconds).

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.
When the parameter is read via PROFIdrive, the TimeDifference data type applies.

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

Access level: 3	**Calculated:** -	**Data type:** Integer32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8060
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the fault that occurred (as integer number).

Dependency: Refer to: r0945, r0947, r0948, r2109, r2130, r2133, r2136, r3120, r3122

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.

p0952 Fault cases counter / Fault cases qty

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6700, 8060
Min	**Max**	**Factory setting**
0	65535	0

Description: Number of fault situations that have occurred since the last reset.

Dependency: The fault buffer is deleted (cleared) by setting p0952 to 0.

Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136

r0963 PROFIBUS baud rate / PB baud rate

CU230P-2_DP

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the corresponding value for the PROFIBUS baud rate.

Value:
0: 9.6 kbit/s
1: 19.2 kbit/s
2: 93.75 kbit/s
3: 187.5 kbit/s
4: 500 kbit/s
6: 1.5 Mbit/s
7: 3 Mbit/s
8: 6 Mbit/s
9: 12 Mbit/s
10: 31.25 kbit/s
11: 45.45 kbit/s
255: Unknown

r0964[0...6] Device identification / Device ident

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the device identification.

Index:
[0] = Company (Siemens = 42)
[1] = Device type
[2] = Firmware version
[3] = Firmware date (year)
[4] = Firmware date (day/month)
[5] = Number of drive objects
[6] = Firmware patch/hot fix

Note: Example:

r0964[0] = 42 --> SIEMENS

r0964[1] = device type, see below

r0964[2] = 403 --> first part of the firmware version V04.03 (for second part, refer to index 6)

r0964[3] = 2010 --> year 2010

r0964[4] = 1705 --> 17th of May

r0964[5] = 2 --> 2 drive objects

r0964[6] = 200 --> second part, firmware version (complete version: V04.03.02.00)

Device type:

r0964[1] = 5700 --> SINAMICS G120 CU230P-2_DP

r0964[1] = 5701 --> SINAMICS G120 CU230P-2_PN

r0964[1] = 5702 --> SINAMICS G120 CU230P-2_CAN
r0964[1] = 5703 --> SINAMICS G120 CU230P-2_HVAC
r0964[1] = 5705 --> SINAMICS G120 CU230P-2_BT

r0965 PROFIdrive profile number / PD profile number

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PROFIdrive profile number and profile version.
Constant value = 0329 hex.
Byte 1: Profile number = 03 hex = PROFIdrive profile
Byte 2: Profile version = 29 hex = Version 4.1

Note: When the parameter is read via PROFIdrive, the Octet String 2 data type applies.

p0969 System runtime relative / t_System relative

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8060
Min	**Max**	**Factory setting**
0 [ms]	4294967295 [ms]	0 [ms]

Description: Displays the system runtime in ms since the last POWER ON.

Note: The value in p0969 can only be reset to 0.
The value overflows after approx. 49 days.
When the parameter is read via PROFIdrive, the TimeDifference data type applies.

p0970 Reset drive parameters / Drive par reset

Access level: 1	**Calculated:** -	**Data type:** Unsigned16
Can be changed: C(1, 30)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	300	0

Description: The parameter is used to initiate the reset of the drive parameters.
Parameters p0100, p0205 are not reset.
The following motor parameters are defined in accordance with the power unit: p0300 ... p0311.

Value:
0: Inactive
1: Start a parameter reset
3: Start download of volatile parameters from RAM
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
30: Start loading the delivery state saved with p0971=30
100: Start a BICO interconnection reset
300: Only Siemens internal

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

Note: A factory setting run can only be started if p0010 was first set to 30 (parameter reset).
At the end of the calculations, p0970 is automatically set to 0.
Parameter reset is completed with p0970 = 0 and r3996[0] = 0.
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

Access level: 1	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	30	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
30: State when delivered, save in non-volatile memory as setting 30

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 switched off 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.

For p0971 = 30:

The original state when delivered is overwritten when executing this memory function.

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

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

r0980[0...299] List of existing parameters 1 / List avail par 1

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

Description: Displays the parameters that exist for this drive.

Dependency: Refer to: r0981, r0989

Note: Modified parameters are displayed in indices 0 to 298. If an index contains the value 0, then the list ends here. In a long list, index 299 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

r0980[0...299], r0981[0...299] ... r0989[0...299]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0981[0...299] List of existing parameters 2 / List avail par 2

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

Description: Displays the parameters that exist for this drive.

Dependency: Refer to: r0980, r0989

Note: Modified parameters are displayed in indices 0 to 298. If an index contains the value 0, then the list ends here. In a long list, index 299 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

r0980[0...299], r0981[0...299] ... r0989[0...299]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0989[0...299] List of existing parameters 10 / List avail par 10

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

Description: Displays the parameters that exist for this drive.

Dependency: Refer to: r0980, r0981

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

This list consists solely of the following parameters:

r0980[0...299], r0981[0...299] ... r0989[0...299]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0990[0...99] List of modified parameters 1 / List chang par 1

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

Description: Displays those parameters with a value other than the factory setting for this drive.

Dependency: Refer to: r0991, r0999

Note: Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here. In a long list, index 99 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

r0990[0...99], r0991[0...99] ... r0999[0...99]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0991[0...99] List of modified parameters 2 / List chang par 2

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

Description: Displays those parameters with a value other than the factory setting for this drive.

Dependency: Refer to: r0990, r0999

Note: Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here. In a long list, index 99 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

r0990[0...99], r0991[0...99] ... r0999[0...99]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0999[0...99] List of modified parameters 10 / List chang par 10

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

Description: Displays those parameters with a value other than the factory setting for this drive.

Dependency: Refer to: r0990, r0991

Note: Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here.

This list consists solely of the following parameters:

r0990[0...99], r0991[0...99] ... r0999[0...99]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

p1000[0...n] Speed setpoint selection / n_set sel

CU230P-2_CAN	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit 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
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
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
37: Fixed speed setpoint + 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
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**		
CU230P-2_DP	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
CU230P-2_PN	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit 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
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

CU230P-2_HVAC	**Access level:** 1	**Calculated:** -	**Data type:** Integer16
CU230P-2_BT	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit 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

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3010
Min	**Max**	**Factory setting**
-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

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3010
Min	**Max**	**Factory setting**
-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.

p1003[0...n] CO: Fixed speed setpoint 3 / n_set_fixed 3

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

Description: Setting and connector output for fixed speed setpoint 3.
Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1004[0...n] CO: Fixed speed setpoint 4 / n_set_fixed 4

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

Description: Setting and connector output for fixed speed setpoint 4.
Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1005[0...n] CO: Fixed speed setpoint 5 / n_set_fixed 5

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

Description: Setting and connector output for fixed speed setpoint 5.

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.

p1006[0...n] CO: Fixed speed setpoint 6 / n_set_fixed 6

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

Description: Setting and connector output for fixed speed setpoint 6.

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.

p1007[0...n] CO: Fixed speed setpoint 7 / n_set_fixed 7

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

Description: Setting and connector output for fixed speed setpoint 7.

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.

p1008[0...n] CO: Fixed speed setpoint 8 / n_set_fixed 8

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

Description: Setting and connector output for fixed speed setpoint 8.

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.

p1009[0...n] CO: Fixed speed setpoint 9 / n_set_fixed 9

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

Description: Setting and connector output for fixed speed setpoint 9.

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.

p1010[0...n] CO: Fixed speed setpoint 10 / n_set_fixed 10

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

Description: Setting and connector output for fixed speed setpoint 10.

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.

p1011[0...n] CO: Fixed speed setpoint 11 / n_set_fixed 11

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

Description: Setting and connector output for fixed speed setpoint 11.

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.

p1012[0...n] CO: Fixed speed setpoint 12 / n_set_fixed 12

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

Description: Setting and connector output for fixed speed setpoint 12.

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.

p1013[0...n] CO: Fixed speed setpoint 13 / n_set_fixed 13

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

Description: Setting and connector output for fixed speed setpoint 13.

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.

p1014[0...n] CO: Fixed speed setpoint 14 / n_set_fixed 14

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

Description: Setting and connector output for fixed speed setpoint 14.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1015[0...n] CO: Fixed speed setpoint 15 / n_set_fixed 15

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

Description: Setting and connector output for fixed speed setpoint 15.

Dependency: Refer to: p1020, p1021, p1022, p1023, r1024, r1197

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p1016 Fixed speed setpoint select mode / n_set_fix select

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 3010, 3011
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the mode to select the fixed speed setpoint.

Value:
1: Direct
2: Binary

Note: For 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.

For p1016 = 2:

In this mode, the setpoint is entered via the fixed speed setpoints p1001 ... p1015.

p1020[0...n] BI: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2505, 3010, 3011
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for selecting the fixed speed setpoint.

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.

Displays the number of the actual fixed speed setpoint in r1197.

Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.

Refer to: p1021, p1022, p1023, r1197

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

p1021[0...n] BI: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1

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

p1022[0...n] BI: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2

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

p1023[0...n] BI: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3001, 3010, 3011
Min	**Max**	**Factory setting**
- [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).

Recommendation: 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

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

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

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fixed speed setpoint selected	Yes	No	3011

Dependency: Refer to: p1016

Note: For 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

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

Description: Sets the configuration for the motorized potentiometer.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Note: For 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.

For 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.

For 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]

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.

For bit 03:

0: Non-volatile data save deactivated.

1: The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for bit 00 = 1).

For bit 04:

When the bit is set, the ramp-function generator is computed independent of the pulse enable. The actual output value of the motorized potentiometer is always in r1050.

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

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2505, 3020
Min	**Max**	**Factory setting**
-	-	[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.

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

CU230P-2_HVAC
CU230P-2_CAN
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2505, 3020
Min	**Max**	**Factory setting**
-	-	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.

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

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2505, 3020
Min	**Max**	**Factory setting**
-	-	[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.

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

CU230P-2_HVAC
CU230P-2_CAN
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2505, 3020
Min	**Max**	**Factory setting**
-	-	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.

p1037[0...n] Motorized potentiometer maximum speed / MotP n_max

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3020
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the maximum speed/velocity for the motorized potentiometer.

Note: This parameter is automatically pre-assigned in the commissioning phase.

The setpoint output from the motorized potentiometer is limited to this value (see function diagram 3020).

p1038[0...n] Motorized potentiometer minimum speed / MotP n_min

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3020
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the minimum speed/velocity for the motorized potentiometer.

Note: This parameter is automatically pre-assigned in the commissioning phase.

The setpoint output from the motorized potentiometer is limited to this value (see function diagram 3020).

p1039[0...n] BI: Motorized potentiometer inversion / MotP inv

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3020
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to invert the minimum speed/velocity or the maximum speed/velocity for the motorized potentiometer.

Dependency: Refer to: p1037, p1038

Note: The inversion is only active during "motorized potentiometer raise" or "motorized potentiometer lower".

p1040[0...n] Motorized potentiometer starting value / Mop start value

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3020
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the starting value for the motorized potentiometer. This starting value becomes effective after the drive has been switched on.

Dependency: Only effective if p1030.0 = 0.

Refer to: p1030

p1041[0...n] BI: Motorized potentiometer manual/automatic / Mop manual/auto

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3020
Min	**Max**	**Factory setting**
-	-	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.

p1042[0...n] CI: Motorized potentiometer automatic setpoint / Mop auto setpoint

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3020
Min	**Max**	**Factory setting**
-	-	0

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

Dependency: Refer to: p1041

p1043[0...n] BI: Motorized potentiometer accept setting value / MotP acc set val

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3020
Min	**Max**	**Factory setting**
-	-	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).

p1044[0...n] CI: Motorized potentiometer setting value / Mop set val

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3020
Min	**Max**	**Factory setting**
-	-	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).

r1045 CO: Mot. potentiometer speed setp. in front of ramp-fct. gen. / Mop n_set bef RFG

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3020
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

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

p1047[0...n] Motorized potentiometer ramp-up time / Mop ramp-up time

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3020
Min	**Max**	**Factory setting**
0.000 [s]	1000.000 [s]	10.000 [s]

Description: Sets the ramp-up time for the internal ramp-function generator for the motorized potentiometer.

The setpoint is changed from zero up to the speed/velocity limit (p1082) within this time (if no initial rounding-off has been activated).

Dependency: Refer to: p1030, p1048, p1082

Note: When the initial rounding-off is activated (p1030.2) the ramp-up time is correspondingly extended.

p1048[0...n] Motorized potentiometer ramp-down time / Mop ramp-down time

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3020
Min	**Max**	**Factory setting**
0.000 [s]	1000.000 [s]	10.000 [s]

Description: Sets the ramp-down time for the internal ramp-function generator for the motorized potentiometer.

The setpoint is changed from the speed/velocity limit (p1082) to zero within this time (if no initial rounding-off has been activated).

Dependency: Refer to: p1030, p1047, p1082

Note: The deceleration time is extended corresponding to the activated initial rounding-off (p1030.2).

r1050 CO: Motorized potentiometer setpoint after ramp-function generator / Mot poti setpoint

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3001, 3020
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Sets the effective setpoint after the internal motorized potentiometer ramp-function generator.

This setpoint is the output value of the motorized potentiometer and must be appropriately interconnected onwards (e.g. with the main setpoint).

Recommendation: Interconnect the signal with main setpoint (p1070).

Dependency: Refer to: p1070

Note: For "With ramp-function generator", after an OFF1, OFF2, OFF3 or for a 0 signal via BI: p0852 (inhibit operation, suppress pulses) the ramp-function generator output (r1050) is set to the starting value (configuration via p1030.0).

p1051[0...n] CI: Speed limit RFG positive direction of rotation / n_limit RFG pos

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
-	-	1083[0]

Description: Sets the signal source for the speed limit of the positive direction on the ramp-function generator input.

Note: The OFF3 ramp-down time (p1135) is effective when the limit is reduced.

p1052[0...n] CI: Speed limit RFG negative direction of rotation / n_limit RFG neg

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
-	-	1086[0]

Description: Sets the signal source for the speed limit of the negative direction on the ramp-function generator input.

Note: The OFF3 ramp-down time (p1135) is effective when the limit is reduced.

p1055[0...n] BI: Jog bit 0 / Jog bit 0

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2501, 3030
Min	**Max**	**Factory setting**
-	-	[0] 0 [1] 722.0 [2] 0 [3] 0

Description: Sets the signal source for jog 1.

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

Dependency: Refer to: p0840, 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 switch on can also be used to switch off again.

p1055[0...n] BI: Jog bit 0 / Jog bit 0

CU230P-2_HVAC	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU230P-2_CAN	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
CU230P-2_BT	**Unit group:** -	**Unit selection:** -	**Func. diagram:** 2501, 3030
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for jog 1.

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

Dependency: Refer to: p0840, 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 switch on can also be used to switch off again.

p1056[0...n] BI: Jog bit 1 / Jog bit 1

CU230P-2_DP	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU230P-2_PN	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2501, 3030
	Min	**Max**	**Factory setting**
	-	-	[0] 0 [1] 722.1 [2] 0 [3] 0

Description: Sets the signal source for jog 2.

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

Dependency: Refer to: p0840, 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 switch on can also be used to switch off again.

p1056[0...n] BI: Jog bit 1 / Jog bit 1

CU230P-2_HVAC	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU230P-2_CAN	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
CU230P-2_BT	**Unit group:** -	**Unit selection:** -	**Func. diagram:** 2501, 3030
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for jog 2.

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

Dependency: Refer to: p0840, 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 switch on can also be used to switch off again.

p1058[0...n] Jog 1 speed setpoint / Jog 1 n_set

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3001, 3030
Min	**Max**	**Factory setting**
-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

p1059[0...n] Jog 2 speed setpoint / Jog 2 n_set

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3001, 3030
Min	**Max**	**Factory setting**
-210000.000 [rpm]	210000.000 [rpm]	-150.000 [rpm]

Description: Sets the speed for jog 2.
Jogging (JOG) is level-triggered, and allows the motor to be incrementally traversed.

Dependency: Refer to: p1055, p1056

p1063[0...n] Setpoint channel speed limit / Setp_chan n_lim

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3040
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	210000.000 [rpm]

Description: Sets the speed limit effective in the setpoint channel.

Dependency: Refer to: p1082, p1083, p1085, p1086, p1088

p1070[0...n] CI: Main setpoint / Main setpoint

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3001, 3030
Min	**Max**	**Factory setting**
-	-	[0] 2050[1] [1] 0 [2] 0 [3] 0

Description: Sets the signal source for the main setpoint.
Examples:
r1024: Fixed speed setpoint effective
r1050: Motor. potentiometer setpoint after the ramp-function generator

Dependency: Refer to: p1071, r1073, r1078

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

p1070[0...n] CI: Main setpoint / Main setpoint

CU230P-2_HVAC
CU230P-2_CAN
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3001, 3030
Min	**Max**	**Factory setting**
-	-	[0] 755[0] [1] 0 [2] 0 [3] 0

Description: Sets the signal source for the main setpoint.
Examples:
r1024: Fixed speed setpoint effective
r1050: Motor. potentiometer setpoint after the ramp-function generator

Dependency: Refer to: p1071, r1073, r1078

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

p1071[0...n]	CI: Main setpoint scaling / Main setp scal		
	Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
	Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 3001, 3030
	Min	**Max**	**Factory setting**
	-	-	1
Description:	Sets the signal source for scaling the main setpoint.		

r1073	CO: Main setpoint effective / Main setpoint eff		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
	Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3030
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]
Description:	Displays the effective main setpoint. The value shown is the main setpoint after scaling.		

p1075[0...n]	CI: Supplementary setp / Suppl setp		
	Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
	Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 3001, 3030
	Min	**Max**	**Factory setting**
	-	-	0
Description:	Sets the signal source for the supplementary setpoint.		
Dependency:	Refer to: p1076, r1077, r1078		

p1076[0...n]	CI: Supplementary setpoint scaling / Suppl setp scal		
	Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
	Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 3001, 3030
	Min	**Max**	**Factory setting**
	-	-	1
Description:	Sets the signal source for scaling the supplementary setpoint.		

r1077	CO: Supplementary setpoint effective / Suppl setpoint eff		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
	Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3030
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]
Description:	Displays the effective supplementary setpoint. The value shown is the additional setpoint after scaling.		

r1078	CO: Total setpoint effective / Total setpoint eff		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
	Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3030
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]
Description:	Displays the total effective setpoint. The value indicates the sum of the effective main setpoint and supplementary setpoint.		
Note:	If the fixed speed setpoint is the source for the speed setpoint, then when the extended service mode is activated (r3889.0 = 1) fixed speed setpoint 15 is displayed.		

p1079 Interpolator clock cycle for speed setpoints / Interp_cyc n_set

CU230P-2_DP	**Access level:** 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
CU230P-2_CAN	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** -
CU230P-2_PN	**Unit group:** -	**Unit selection:** -	**Func. diagram:** -
CU230P-2_BT	**Min**	**Max**	**Factory setting**
	0.00 [ms]	127.00 [ms]	0.00 [ms]

Description: Sets the time with which new speed setpoints are interpolated.

With interpolation, the higher-level control adapts the speed setpoint steps to the time grid of the setpoint channel.

Recommendation: For non-synchronous operation, a setting to the maximum time difference between two setpoints is recommended.

For sensorless vector control, interpolation should always be activated if the ramp-up and ramp-down times of the ramp-function generator are very short. The drive must be able to follow the external speed setpoint (the drive does not ramp up at the torque limit).

Note: For acceleration precontrol of the speed controller, interpolation prevents torque peaks from occurring if the ramp-up or ramp-down times in the setpoint channel are zero.

When exiting commissioning, the parameter is preset using the automatic calculation if, as setpoint source for the main or supplementary setpoint, a PZD receive word is already set and the ramp-up time is zero.

Interpolation is limited to 127 cycles of the setpoint channel.

p1079 = 0 ms: interpolation is deactivated.

p1079 = 0.01 ms: the interpolation is automatically determined the first time that the speed setpoint is changed. After this, no other changes are made if the send times of the external control increase. Writing to p1079 again initiates the automatic adaptation of the interpolation time.

p1079 > 0.01 ms: interpolation is performed corresponding to the ratio to the computation clock cycle.

p1080[0...n] Minimum speed / n_min

PM230	**Access level:** 1	**Calculated:** -	**Data type:** FloatingPoint32
PM240	**Can be changed:** C(1), T	**Scaling:** -	**Dyn. index:** DDS, p0180
PM250, PM260	**Unit group:** 3_1	**Unit selection:** p0505	**Func. diagram:** 3050, 8022
	Min	**Max**	**Factory setting**
	0.000 [rpm]	19500.000 [rpm]	0.000 [rpm]

Description: Sets the lowest possible motor speed.

This value is not undershot in operation.

Dependency: Refer to: p1106

Warning: The minimum speed is preassigned to 20% of the rated motor speed.

After all of the enable signal have been switched on, with the appropriate direction specified, the motor accelerates to this minimum speed.

Notice: The effective minimum speed is formed from p1080 and p1106.

Note: The parameter value applies for both motor directions.

In exceptional cases, the motor can operate below this value (e.g. when reversing).

p1080[0...n] Minimum speed / n_min

PM330	**Access level:** 1	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: C(1), T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3050, 8022
	Min	**Max**	**Factory setting**
	0.000 [rpm]	19500.000 [rpm]	0.000 [rpm]

Description: Sets the lowest possible motor speed.

This value is not undershot in operation.

Dependency: Refer to: p1106

Notice: The effective minimum speed is formed from p1080 and p1106.

Note: The parameter value applies for both motor directions.

In exceptional cases, the motor can operate below this value (e.g. when reversing).

p1081 Maximum speed scaling / n_max scal

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 3050, 3095
Min	**Max**	**Factory setting**
100.00 [%]	105.00 [%]	100.00 [%]

Description: Sets the scaling for the maximum speed (p1082).

For a higher-level speed control, this scaling allows the maximum speed to be briefly exceeded.

Dependency: Refer to: p1082

Notice: Continuous operation above a scaling of 100 % is not permitted.

p1082[0...n] Maximum speed / n_max

PM230
PM240
PM250, PM260

Access level: 1	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: C(1), T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3020, 3050, 3070
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	1500.000 [rpm]

Description: 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)

Dependency: For vector control, the maximum speed is restricted to 60.0 / (8.333 x 500 µs x r0313). This can be identified by a reduction in r1084. p1082 is not changed in this process due to the fact that the operating mode p1300 can be changed over.

If a sine-wave filter (p0230 = 3) is parameterized as output filter, then the maximum speed is limited corresponding to the maximum permissible filter output frequency (refer to the filter data sheet). When using sine-wave filters (p0230 = 3, 4), the maximum speed r1084 is limited to 70% of the resonant frequency of the filter capacitance and the motor leakage inductance.

For reactors and dU/dt filters, it is limited to 120 Hz / r0313.

Refer to: p0230, r0313, p0322

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

Note: The parameter applies for both motor directions.

The parameter has a limiting effect and is the reference quantity for all ramp-up and ramp-down times (e.g. down ramps, ramp-function generator, motor potentiometer).

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 <= 60 x minimum (15 x p0310, 550 Hz) / r0313

p1082 <= 60 x maximum power unit pulse frequency / (k x 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 x 60 / r0313).

For synchronous motors, the following additionally applies:

During automatic calculation (p0340, p3900), p1082 is limited to speeds where the EMF does not exceed the DC link voltage.

p1082 is also available in the quick commissioning (p0010 = 1); this means that when exiting via p3900 > 0, the value is not changed.

p1082[0...n] Maximum speed / n_max

PM330

Access level: 1	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: C(1), T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3020, 3050, 3070
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	1500.000 [rpm]

Description: Sets the highest possible speed setpoint.

Dependency: The maximum speed is limited to: p1082 <= 60 x 150 Hz / r0313

Refer to: p0230, p0310, r0313, p0322

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

Note: The parameter applies for both motor directions.

The parameter has a limiting effect and is the reference quantity for all ramp-up and ramp-down times (e.g. down ramps, ramp-function generator, motor potentiometer).

The parameter is part of the quick commissioning (p0010 = 1); this means that it is appropriately pre-assigned when changing p0310, p0311 and p0322 (p0310 x 60 / r0313, for p0322 = 0).

p1083[0...n] CO: Speed limit in positive direction of rotation / n_limit pos

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	210000.000 [rpm]

Description: Sets the maximum speed for the positive direction.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

r1084 CO: Speed limit positive effective / n_limit pos eff

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3050, 7958
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the active positive speed limit.

Dependency: Refer to: p1082, p1083, p1085

Note: Vector control: r1084 <= 60 x 240 Hz / r0313

p1085[0...n] CI: Speed limit in positive direction of rotation / n_limit pos

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
-	-	1083[0]

Description: Sets the signal source for the speed limit of the positive direction.

p1086[0...n] CO: Speed limit in negative direction of rotation / n_limit neg

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
-210000.000 [rpm]	0.000 [rpm]	-210000.000 [rpm]

Description: Sets the speed limit for the negative direction.

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

r1087 CO: Speed limit negative effective / n_limit neg eff

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3050, 7958
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the active negative speed limit.
Dependency: Refer to: p1082, p1086, p1088
Note: Vector control: r1087 >= -60 x 240 Hz / r0313

p1088[0...n] CI: Speed limit in negative direction of rotation / n_limit neg

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
-	-	1086[0]

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

p1091[0...n] Skip speed 1 / n_skip 1

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
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.

p1092[0...n] Skip speed 2 / n_skip 2

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
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.

p1093[0...n] Skip speed 3 / n_skip 3

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
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.

p1094[0...n] Skip speed 4 / n_skip 4

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
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.

p1098[0...n] CI: Skip speed scaling / n_skip scal

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the skip speeds.

Dependency: Refer to: p1091, p1092, p1093, p1094

r1099.0 CO/BO: Skip band status word / Skip band ZSW

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the skip bands.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	r1170 within the skip band	Yes	No	3050

Dependency: Refer to: r1170

Note: For 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).

p1101[0...n] Skip speed bandwidth / n_skip bandwidth

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
0.000 [rpm]	210000.000 [rpm]	0.000 [rpm]

Description: Sets the bandwidth for the skip speeds/velocities 1 to 4.

Dependency: Refer to: p1091, p1092, p1093, p1094

Note: The setpoint (reference) speeds are skipped (suppressed) in the range of the skip speed +/-p1101.

Steady-state operation is not possible in the skipped (suppressed) speed range. The skip (suppression) range is skipped.

Example:

p1091 = 600 and p1101 = 20

--> setpoint speeds between 580 and 620 [rpm] are skipped.

For the skip bandwidths, the following hysteresis behavior applies:

For a setpoint speed coming from below, the following applies:

r1170 < 580 [rpm] and 580 [rpm] <= r1114 <= 620 [rpm] --> r1119 = 580 [rpm]

For a setpoint speed coming from above, the following applies:

r1170 > 620 [rpm] and 580 [rpm] <= r1114 <= 620 [rpm] --> r1119 = 620 [rpm]

p1106[0...n] CI: Minimum speed signal source / n_min s_src

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3050
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for lowest possible motor speed.

Dependency: Refer to: p1080

Notice: The effective minimum speed is formed from p1080 and p1106.

p1108[0...n] BI: Total setpoint selection / Total setp sel

Access level: 4	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3030
Min	**Max**	**Factory setting**
-	-	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.

If the "hibernation mode" function is activated (p2398 = 1), an interconnection is made to r2399.7.

Refer to: p1109

Caution: If the technology controller is to supply the total setpoint using p1109, then it is not permissible to disable the interconnection to its status word (r2349.4).

If the "hibernation mode" function is activated, then it is not permissible to disable the interconnection to status word r2399.

p1109[0...n] CI: Total setpoint / Total setp

Access level: 4	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3030
Min	**Max**	**Factory setting**
-	-	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.

If the "hibernation mode" function is activated (p2398 = 1), an interconnection is made to r2397[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).

If the "hibernation mode" function is activated, then it is not permissible to withdraw the interconnection to setpoint r2398[0].

p1110[0...n] BI: Inhibit negative direction / Inhib neg dir

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2505, 3040
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source to disable the negative direction.

Dependency: Refer to: p1111

p1111[0...n] BI: Inhibit positive direction / Inhib pos dir

	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2505, 3040
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source to disable the positive direction.

Dependency: Refer to: p1110

r1112 CO: Speed setpoint after minimum limiting / n_set aft min_lim

	Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
	Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3050
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed setpoint after the minimum limiting.

Dependency: Refer to: p1091, p1092, p1093, p1094, p1101

p1113[0...n] BI: Setpoint inversion / Setp inv

CU230P-2_DP	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU230P-2_PN	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2441, 2442, 2505, 3040
	Min	**Max**	**Factory setting**
	-	-	[0] 2090.11 [1] 0 [2] 0 [3] 0

Description: Sets the signal source to invert the setpoint.

Dependency: Refer to: r1198

Caution: If the technology controller is being used as the speed main setpoint (p2251 = 0), do not invert the setpoint using p1113 when the technology controller is enabled because this can cause the speed to change suddenly and lead to positive couplings in the control loop.

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

p1113[0...n] BI: Setpoint inversion / Setp inv

CU230P-2_HVAC	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU230P-2_CAN	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
CU230P-2_BT	**Unit group:** -	**Unit selection:** -	**Func. diagram:** 2441, 2442, 2505, 3040
	Min	**Max**	**Factory setting**
	-	-	[0] 722.1 [1] 0 [2] 0 [3] 0

Description: Sets the signal source to invert the setpoint.

Dependency: Refer to: r1198

Caution: If the technology controller is being used as the speed main setpoint (p2251 = 0), do not invert the setpoint using p1113 when the technology controller is enabled because this can cause the speed to change suddenly and lead to positive couplings in the control loop.

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

r1114 CO: Setpoint after the direction limiting / Setp after limit

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3001, 3040, 3050
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the speed/velocity setpoint after the changeover and limiting the direction.

r1119 CO: Ramp-function generator setpoint at the input / RFG setp at inp

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3050, 3070, 6300, 8022
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

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

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

Note: The setpoint is influenced by other functions, e.g. skip (suppressed) speeds, minimum and maximum limits.

p1120[0...n] Ramp-function generator ramp-up time / RFG ramp-up time

PM230
PM240
PM250, PM260

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1), U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	999999.000 [s]	10.000 [s]

Description: The ramp-function generator ramps-up the speed setpoint from standstill (setpoint = 0) up to the maximum speed (p1082) in this time.

Dependency: Refer to: p1082, p1123

Note: The ramp-up time can be scaled via connector input p1138.

The parameter is adapted during the rotating measurement (p1960 > 0). This is the reason that during the rotating measurement, the motor can accelerate faster than was originally parameterized.

For U/f control and sensorless vector control (see p1300), a ramp-up time of 0 s does not make sense. The setting should be based on the startup times (r0345) of the motor.

p1120[0...n] Ramp-function generator ramp-up time / RFG ramp-up time

PM330

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1), U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	999999.000 [s]	20.000 [s]

Description: The ramp-function generator ramps-up the speed setpoint from standstill (setpoint = 0) up to the maximum speed (p1082) in this time.

Dependency: Refer to: p1082, p1123

Note: The ramp-up time can be scaled via connector input p1138.

The parameter is adapted during the rotating measurement (p1960 > 0). This is the reason that during the rotating measurement, the motor can accelerate faster than was originally parameterized.

For U/f control and sensorless vector control (see p1300), a ramp-up time of 0 s does not make sense. The setting should be based on the startup times (r0345) of the motor.

p1121[0...n]	Ramp-function generator ramp-down time / RFG ramp-down time		
PM230 PM330	**Access level:** 1	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: C(1), U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
	Min	**Max**	**Factory setting**
	0.000 [s]	999999.000 [s]	30.000 [s]

Description: 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.

Dependency: The parameter is pre-assigned depending on the size of the power unit.

Refer to: p1082, p1127

Note: For U/f control and sensorless vector control (see p1300), a ramp-down time of 0 s does not make sense. The setting should be based on the startup times (r0345) of the motor.

p1121[0...n]	Ramp-function generator ramp-down time / RFG ramp-down time		
PM240 PM250, PM260	**Access level:** 1	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: C(1), U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
	Min	**Max**	**Factory setting**
	0.000 [s]	999999.000 [s]	10.000 [s]

Description: 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.

Dependency: Refer to: p1082, p1127

Note: For U/f control and sensorless vector control (see p1300), a ramp-down time of 0 s does not make sense. The setting should be based on the startup times (r0345) of the motor.

p1122[0...n]	BI: Bypass ramp-function generator / Bypass RFG		
	Access level: 4	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2505
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for bypassing the ramp generator (ramp-up and ramp-down times = 0).

Caution: If the technology controller is operated in mode p2251 = 0 (technology controller as main speed setpoint), or the "hibernation mode" function is activated, then it is not permissible to disable the interconnection to the relevant status word (r2349, r2399).

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

Note: In the case of sensorless vector control, the ramp-function generator must not be bypassed, other than indirectly by means of interconnection with r2349 or r2399.

p1123[0...n]	Ramp-function generator minimum ramp-up time / RFG t_RU min		
	Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0.000 [s]	999999.000 [s]	0.000 [s]

Description: Sets the minimum ramp-up time.

The ramp-up time (p1120) is limited internally to this minimum value.

Dependency: Refer to: p1082

Note: The setting should be based on the startup times (r0345) of the motor.
If the maximum speed p1082 changes, p1123 is re-calculated.

p1127[0...n] Ramp-function generator minimum ramp-down time / RFG t_RD min

PM230
PM250, PM260

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	999999.000 [s]	0.000 [s]

Description: Sets the minimum ramp-down time.
The ramp-down time (p1121) is limited internally to this minimum value.
The parameter cannot be set shorter than the minimum ramp-up time (p1123).

Dependency: Refer to: p1082

Note: For U/f control and sensorless vector control (see p1300), a ramp-down time of 0 s does not make sense. The setting should be based on the startup times (r0345) of the motor.
If the maximum speed p1082 changes, p1127 is re-calculated.

p1127[0...n] Ramp-function generator minimum ramp-down time / RFG t_RD min

PM240
PM330

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	999999.000 [s]	0.000 [s]

Description: Sets the minimum ramp-down time.
The ramp-down time (p1121) is limited internally to this minimum value.
The parameter cannot be set shorter than the minimum ramp-up time (p1123).

Dependency: Refer to: p1082

Note: For U/f control and sensorless vector control (see p1300), a ramp-down time of 0 s does not make sense. 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.

p1130[0...n] Ramp-function generator initial rounding-off time / RFG t_start_round

PM230
PM330

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	2.000 [s]

Description: Sets the initial rounding-off time for the extended ramp generator. The value applies to ramp-up and ramp-down.

Note: Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.
Rounding off is not active if the technology controller is used as main speed setpoint (p2251 = 0).

p1130[0...n] Ramp-function generator initial rounding-off time / RFG t_start_round

PM240
PM250, PM260

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	0.000 [s]

Description: Sets the initial rounding-off time for the extended ramp generator. The value applies to ramp-up and ramp-down.

Note: Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.
Rounding off is not active if the technology controller is used as main speed setpoint (p2251 = 0).

p1131[0...n] Ramp-function generator final rounding-off time / RFG t_end_delay

PM230

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	2.000 [s]

Description: Sets the final rounding-off time for the extended ramp generator.

The value applies to ramp-up and ramp-down.

Note: Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.

Rounding off is not active if the technology controller is used as main speed setpoint (p2251 = 0).

p1131[0...n] Ramp-function generator final rounding-off time / RFG t_end_delay

PM240
PM250, PM260

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	0.000 [s]

Description: Sets the final rounding-off time for the extended ramp generator.

The value applies to ramp-up and ramp-down.

Note: Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.

Rounding off is not active if the technology controller is used as main speed setpoint (p2251 = 0).

p1131[0...n] Ramp-function generator final rounding-off time / RFG t_end_delay

PM330

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	3.000 [s]

Description: Sets the final rounding-off time for the extended ramp generator.

The value applies to ramp-up and ramp-down.

Note: Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.

Rounding off is not active if the technology controller is used as main speed setpoint (p2251 = 0).

p1134[0...n] Ramp-function generator rounding-off type / RFG round-off type

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the smoothed response to the OFF1 command or the reduced setpoint for the extended ramp-function generator.

Value:
0: Continuous smoothing
1: Discontinuous smoothing

Dependency: No effect up to initial rounding-off time (p1130) > 0 s.

Note: 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.

p1135[0...n] **OFF3 ramp-down time / OFF3 t_RD**

PM230

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1), U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	5400.000 [s]	30.000 [s]

Description: Sets the ramp-down time from the maximum speed down to zero speed for the OFF3 command.

Dependency: The parameter is pre-assigned depending on the size of the power unit.

Note: This time can be exceeded if the DC link voltage reaches its maximum value.

p1135[0...n] **OFF3 ramp-down time / OFF3 t_RD**

PM240
PM250, PM260

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1), U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	5400.000 [s]	0.000 [s]

Description: Sets the ramp-down time from the maximum speed down to zero speed for the OFF3 command.

Note: This time can be exceeded if the DC link voltage reaches its maximum value.

p1135[0...n] **OFF3 ramp-down time / OFF3 t_RD**

PM330

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(1), U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	5400.000 [s]	3.000 [s]

Description: Sets the ramp-down time from the maximum speed down to zero speed for the OFF3 command.

Dependency: The parameter is pre-assigned depending on the size of the power unit.

Note: This time can be exceeded if the DC link voltage reaches its maximum value.

p1136[0...n] **OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd**

PM230

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	2.000 [s]

Description: Sets the initial rounding-off time for OFF3 for the extended ramp generator.

p1136[0...n] **OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd**

PM240
PM250, PM260

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	0.000 [s]

Description: Sets the initial rounding-off time for OFF3 for the extended ramp generator.

p1136[0...n] OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd

PM330

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	0.500 [s]

Description: Sets the initial rounding-off time for OFF3 for the extended ramp generator.

p1137[0...n] OFF3 final rounding-off time / RFG OFF3 t_end_del

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
0.000 [s]	30.000 [s]	0.000 [s]

Description: Sets the final rounding-off time for OFF3 for the extended ramp generator.

p1138[0...n] CI: Ramp-function generator ramp-up time scaling / RFG t_RU scal

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the ramp-up time of the ramp-function generator.

Dependency: Refer to: p1120

Note: The ramp-up time is set in p1120.

p1139[0...n] CI: Ramp-function generator ramp-down time scaling / RFG t_RD scal

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for scaling the ramp-down time of the ramp-function generator.

Dependency: Refer to: p1121

Note: The ramp-down time is set in p1121.

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

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
Min	**Max**	**Factory setting**
-	-	[0] 2090.4 [1] 1 [2] 2090.4 [3] 2090.4

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:
Enable ramp-function generator.

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.

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

CU230P-2_HVAC	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU230P-2_CAN	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
CU230P-2_BT	**Unit group:** -	**Unit selection:** -	**Func. diagram:** 2501
	Min	**Max**	**Factory setting**
	-	-	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:
Enable ramp-function generator.

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

CU230P-2_DP	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU230P-2_PN	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
	Min	**Max**	**Factory setting**
	-	-	[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.

p1141[0...n] BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG

CU230P-2_HVAC	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU230P-2_CAN	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
CU230P-2_BT	**Unit group:** -	**Unit selection:** -	**Func. diagram:** 2501
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for the command "continue ramp-function generator/freeze ramp-function generator".

For the PROFIdrive profile, this command corresponds to control word 1 bit 5 (STW1.5).

BI: p1141 = 0 signal:

Freezes the ramp-function generator.

BI: p1141 = 1 signal:

Continue ramp-function generator.

Dependency: Refer to: r0054, p1140, p1142

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

Notice: The ramp-function generator is, independent of the state of the signal source, active in the following cases:

- OFF1/OFF3.
- ramp-function generator output within the suppression bandwidth.
- ramp-function generator output below the minimum speed.

p1142[0...n] BI: Enable setpoint/inhibit setpoint / Setpoint enable

CU230P-2_DP	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU230P-2_PN	**Can be changed:** T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
	Min	**Max**	**Factory setting**
	-	-	[0] 2090.6 [1] 1 [2] 2090.6 [3] 2090.6

Description: Sets the signal source for the command "enable setpoint/inhibit setpoint".

For the PROFIdrive profile, this command corresponds to control word 1 bit 6 (STW1.6).

BI: p1142 = 0 signal

Inhibits the setpoint (the ramp-function generator input is set to zero).

BI: p1142 = 1 signal

Setpoint enable.

Dependency: Refer to: p1140, p1141

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

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

Note: When the function module "position control" (r0108.3 = 1) is activated, this binector input is interconnected as follows as standard:

BI: p1142 = 0 signal

p1142[0...n] BI: Enable setpoint/inhibit setpoint / Setpoint enable

CU230P-2_HVAC
CU230P-2_CAN
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2501
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the command "enable setpoint/inhibit setpoint".
For the PROFIdrive profile, this command corresponds to control word 1 bit 6 (STW1.6).
BI: p1142 = 0 signal
Inhibits the setpoint (the ramp-function generator input is set to zero).
BI: p1142 = 1 signal
Setpoint enable.

Dependency: Refer to: p1140, p1141

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

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

Note: When the function module "position control" (r0108.3 = 1) is activated, this binector input is interconnected as follows as standard:
BI: p1142 = 0 signal

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

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

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

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

Dependency: The signal source for accepting the setting value is set using parameters.
Refer to: p1143

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

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 3080
Min	**Max**	**Factory setting**
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 controller/velocity controller input that is necessary to ensure that the motor accelerates at the torque/force limit.

Recommendation: 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.

For p1145 = 0.0:

This value deactivates the ramp-function generator tracking.

For 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.

For 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:

- deactivate 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.

The speed difference is reduced if the integral component of the speed controller is not maintained when the torque limit is reached (p1400.16 = 1).

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2007	**Dyn. index:** -
Unit group: 39_1	**Unit selection:** p0505	**Func. diagram:** 3070
Min	**Max**	**Factory setting**
- [rev/s²]	- [rev/s²]	- [rev/s²]

Description: Displays the acceleration of the ramp-function generator.

Dependency: Refer to: p1145

r1170 CO: Speed controller setpoint sum / Speed setpoint sum

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3001, 3080, 6300
Min	**Max**	**Factory setting**
- [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).

r1197 Fixed speed setpoint number actual / n_set_fixed No act

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 3010
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of the selected fixed speed/velocity setpoint.

Dependency: Refer to: p1020, p1021, p1022, p1023

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

r1198.0...15 CO/BO: Control word setpoint channel / STW setpoint chan

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2505
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the control word of the setpoint channel.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fixed setpoint bit 0	Yes	No	3010
01	Fixed setpoint bit 1	Yes	No	3010
02	Fixed setpoint bit 2	Yes	No	3010
03	Fixed setpoint 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	3070

r1199.0...8 CO/BO: Ramp-function generator status word / RFG ZSW

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 3001, 3080
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the ramp-function generator (RFG).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Note: For bit 02:

The bit is the result of the OR logic operation - bit 00 and bit 01.

p1200[0...n] Flying restart operating mode / FlyRest op_mode

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6850
Min	**Max**	**Factory setting**
0	4	0

Description: Sets the operating mode for flying restart.

The flying restart allows the drive converter to be switched on while the motor is still rotating. In so doing, the drive converter output frequency is changed until the actual motor speed/velocity is found. The motor then accelerates up to the setpoint at the ramp-function generator setting.

Value:
0: Flying restart inactive
1: Flying restart always active (start in setpoint direction)
4: Flying restart always active (start only in setpoint direction)

Dependency: A differentiation is made between flying restart for U/f control and for vector control (p1300).

Flying restart, U/f control: p1202, p1203, r1204

Flying restart, vector control: p1202, p1203, r1205

For synchronous motors, flying restart cannot be activated.

Refer to: p1201

Refer to: F07330, F07331

Notice: The "flying restart" function must be used in cases where the motor may still be running (e.g. after a brief line supply interruption) or is being driven by the load. The system might otherwise shut down as a result of overcurrent.

Note: 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).

p1201[0...n] BI: Flying restart enable signal source / Fly_res enab S_src

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

p1202[0...n] Flying restart search current / FlyRest I_srch

PM230			
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	10 [%]	400 [%]	90 [%]

Description: Sets the search current for the "flying restart" function.

The value is referred to the motor magnetizing current.

Dependency: The parameter is pre-assigned depending on the size of the power unit.

Refer to: r0331

Caution: An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.

Notice: The following applies for a synchronous reluctance motor:

The minimum search current is limited (p1202 >= 50 %).

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 actual search current is set as a function of the frequency based on the voltage setpoints.

Reducing the search current can also improve flying restart performance (if the system moment of inertia is not very high, for example).

The following applies for a synchronous reluctance motor:

Adjusting the search current only has an effect if a motor data identification run is then performed (see p1909 bit 22).

It is possible that a value exceeding 100% cannot be reached if the motor rated power is significantly less than that of the power unit.

If the motor rated power is significantly higher than that of the power unit, then the search current should be increased for the higher speed range.

p1202[0...n] Flying restart search current / FlyRest I_srch

PM240 PM250 PM260, PM330			
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	10 [%]	400 [%]	100 [%]

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.

Notice: The following applies for a synchronous reluctance motor:

The minimum search current is limited (p1202 >= 50 %).

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 actual search current is set as a function of the frequency based on the voltage setpoints.

Reducing the search current can also improve flying restart performance (if the system moment of inertia is not very high, for example).

The following applies for a synchronous reluctance motor:

Adjusting the search current only has an effect if a motor data identification run is then performed (see p1909 bit 22).

It is possible that a value exceeding 100% cannot be reached if the motor rated power is significantly less than that of the power unit.

If the motor rated power is significantly higher than that of the power unit, then the search current should be increased for the higher speed range.

p1203[0...n] Flying restart search rate factor / FlyRst v_Srch Fact

PM230

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
10 [%]	4000 [%]	150 [%]

Description: Sets the factor for the search speed for flying restart.

The value influences the rate at which the output frequency is changed during a flying restart . A higher value results in a longer search time.

Recommendation: For sensorless vector control and motor cables longer than 200 m, set the factor p1203 >= 300 %.

Caution: An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.

For vector control, a value that is too low or too high can cause flying restart to become unstable.

Note: The parameter factory setting is selected so that standard induction motors that are rotating can be found and restarted as quickly as possible (fast flying restart).

With this pre-setting, if the motor is not found (e.g. for motors that are accelerated as a result of active loads or with U/f control and low speeds), we recommend that the search rate is reduced (by increasing p1203).

For the flying restart of a reluctance motor, the minimum search velocity is limited (p1203 >= 50 %).

p1203[0...n] Flying restart search rate factor / FlyRst v_Srch Fact

PM240
PM250
PM260, PM330

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
10 [%]	4000 [%]	100 [%]

Description: Sets the factor for the search speed for flying restart.

The value influences the rate at which the output frequency is changed during a flying restart . A higher value results in a longer search time.

Recommendation: For sensorless vector control and motor cables longer than 200 m, set the factor p1203 >= 300 %.

Caution: An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.

For vector control, a value that is too low or too high can cause flying restart to become unstable.

Note: The parameter factory setting is selected so that standard induction motors that are rotating can be found and restarted as quickly as possible (fast flying restart).

With this pre-setting, if the motor is not found (e.g. for motors that are accelerated as a result of active loads or with U/f control and low speeds), we recommend that the search rate is reduced (by increasing p1203).

For the flying restart of a reluctance motor, the minimum search velocity is limited (p1203 >= 50 %).

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

PM230
PM240
PM250, PM260

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

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 < threshold	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	-

r1204.0...15 CO/BO: Flying restart U/f control status / FlyRest Uf st

PM330

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

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 < threshold	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	-
14	Fast flying restart w/ voltage model for induction motor activ.	Yes	No	-
15	Flying restart with VSM active	Yes	No	-

r1205.0...21 CO/BO: Flying restart vector control status / FlyRest vector st

PM230
PM240
PM250, PM260

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

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 component 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	-
21	Voltage pulse active	Yes	No	-

Note: For bit 00 ... 09:
Used to control internal sequences during the flying restart.
Depending on the motor type (p0300), the number of active bits differs.
For bits 10 ... 15:
Are used to monitor the flying restart sequence.

r1205.0...20 CO/BO: Flying restart vector control status / FlyRest vector st

PM330

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

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 component 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	-
16	Fast flying restart w/ voltage model for induction motor activ.	Yes	No	-
17	Fast flying restart w/ voltage model for induction motor exited	Yes	No	-
18	Apply VSM voltage to the monitor	Yes	No	-
19	Preassign flux ramp	Yes	No	-
20	Adaptation current controller and speed adapt. controller gain	Yes	No	-

Note: For bit 00 ... 09:
Used to control internal sequences during the flying restart.
Depending on the motor type (p0300), the number of active bits differs.
For bits 10 ... 15:
Are used to monitor the flying restart sequence.

p1206[0...9] Automatic restart faults not active / AR fault not act

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets faults for which automatic restart should not be effective.

Dependency: The setting is only effective for p1210 = 6, 16, 26.
Refer to: p1210

p1210 Automatic restart mode / AR mode

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	26	0

Description: Sets the automatic restart mode (AR).

The parameters must be saved in the non-volatile memory p0971 = 1 in order that the setting becomes effective.

Value:
0: Inhibit automatic restart
1: Acknowledge all faults without restarting
4: Restart after line supply failure w/o additional start attempts
6: Restart after fault with additional start attempts
14: Restart after line supply failure following man. acknowledgment
16: Restart after fault following manual acknowledgment
26: Acknowledging all faults and reclosing for an ON command

Recommendation: For brief line supply failures, the motor shaft may still be rotating when restarting. The "flying restart" function (p1200) might need to be activated to restart while the motor shaft is still rotating.

Dependency: The automatic restart requires an active ON command (e.g., via a digital input). If, for p1210 > 1, there is no active ON command, then the automatic restart is interrupted.

When using an Operator Panel in the LOCAL mode, then there is no automatic start.

For p1210 = 14, 16, a manual acknowledgment is required for an automatic restart.

Refer to: p0840, p0857, p1267

Refer to: F30003

Danger: If the automatic restart is activated (p1210 > 1) if there is an ON command (refer to p0840), the drive is switched on 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 switching-on operation can only be interrupted by withdrawing the ON command.

Notice: A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1). When faults are present, therefore, the parameter cannot be changed.

For p1210 > 1, the motor is automatically started.

Note: For 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.

For 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.

For p1210 = 6:

An automatic restart is carried out if any fault has occurred.

For p1210 = 14:

as for p1210 = 4. However, active faults must be manually acknowledged.

For p1210 = 16:

as for p1210 = 6. However, active faults must be manually acknowledged.

For p1210 = 26:

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

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

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

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

Refer to: p1210, r1214

Refer to: F07320

Notice: After fault F07320 occurs, the switch-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 (blackout) the start counter always starts with the counter value that applied before the power failure, and decrements this start attempt by 1. If a further attempt to acknowledge is started by the automatic restart function prior to power failure, e.g. when the CU remains active on power failure longer than the time p1212 / 2, the fault counter will already have been decremented once. In this case, the start counter is thus decreased by the value 2.

Note: A start attempt starts immediately when a fault occurs. The start attempt is considered to been completed if the motor was magnetized (r0056.4 = 1) and an additional delay time of 1 s has expired.

As long as a fault is present, an acknowledge command is generated in the time intervals of p1212 / 2. When successfully acknowledged, the start counter is decremented. If, after this, a fault re-occurs before a restart has been completed, then acknowledgment 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, acknowledgment is immediate and when the line supply returns, the system is switched on. If, between successfully acknowledging the line fault and the line supply returning, another fault occurs, then its acknowledgment also causes the start counter to be decremented.

For p1210 = 26:

The start counter is decremented if after a successful fault acknowledgment, the on command is present.

p1212 Automatic restart delay time start attempts / AR t_wait start

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.1 [s]	1000.0 [s]	1.0 [s]

Description: Sets the delay time up to restart.

Dependency: This parameter setting is active for p1210 = 4, 6, 26.

For p1210 = 1, the following applies:

Faults are only automatically acknowledged in half of the waiting time, no restart.

Refer to: p1210, r1214

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.

p1213[0...1] Automatic restart monitoring time / AR t_monit

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [s]	10000.0 [s]	[0] 60.0 [s] [1] 0.0 [s]

Description: Sets the monitoring time of the automatic restart (AR).

Index: [0] = Restart
[1] = Reset start counter

Dependency: Refer to: p1210, r1214

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

After fault F07320 occurs, the switch-on command must be withdrawn and all of the faults acknowledged so that the automatic restart function is re-activated.

Note: For index 0:

The monitoring time starts when the faults are detected. If the automatic acknowledgments 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 deactivated 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.

For index 1:

The start counter (refer to r1214) is only set back to the starting value p1211 if, after successful restart, the time in p1213[1] has expired. The delay time is not effective for fault acknowledgment 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 switch-on command is withdrawn and the fault is acknowledged.

The start counter is immediately updated if the starting value p1211 or the mode p1210 is changed.

For p1210 = 26, the fault must have been successfully acknowledged and the switch-on command issued within the time in p1213[0]. Otherwise, fault F07320 is generated after the set time.

r1214.0...15 CO/BO: Automatic restart status / AR status

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

Description: Displays the status of the automatic restart (AR).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Initialization	Yes	No	-
01	Wait for alarm	Yes	No	-
02	Auto restart act	Yes	No	-
03	Setting the acknowledgment command	Yes	No	-
04	Acknowledge alarms	Yes	No	-
05	Restart	Yes	No	-
06	Delay time running after automatic switch-on	Yes	No	-
07	Fault	Yes	No	-
10	Effective fault	Yes	No	-
12	Start counter bit 0	ON	OFF	-
13	Start counter bit 1	ON	OFF	-
14	Start counter bit 2	ON	OFF	-
15	Start counter bit 3	ON	OFF	-

Note: For bit 00:

State to display the single initialization after POWER ON.

For bit 01:

State in which the automatic restart function waits for faults (initial state).

For bit 02:

General display that a fault has been identified and that the restart or acknowledgment has been initiated.

For 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.

For bit 04:

State in which the faults that are present are acknowledged. The state is exited again after successful acknowledgment. A change is only made into the next state if it is signaled that a fault is no longer present after an acknowledgment command (bit 3 = 1).

For bit 05:

State in which the drive is automatically switched on (only for p1210 = 4, 6).

For bit 06:

State in which the system waits after having been switched on, 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.

For 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 switch-on command.

For bit 10:

When the automatic restart function is active, r1214.7 is displayed, otherwise the active fault r2139.3.

The bit is set if the automatic restart can no longer acknowledge a fault, and cancels with fault F07320.

For bits 12 ... 15:

Actual state of the start counter (binary coded).

For bit 04 in addition:

For p1210 = 26, the system waits in this state until the switch-on command is available.

p1226[0...n] Threshold for zero speed detection / n_standst n_thresh

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8022
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	20.00 [rpm]

Description: Sets the speed threshold for the standstill identification.

Acts on the actual value and setpoint monitoring.

When braking with OFF1 or OFF3, when the threshold is undershot, standstill is identified.

Dependency: Refer to: p1227

Caution: The following applies for encoderless speed control:

⚠ 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, p1750.7).

Notice: For reasons relating to the compatibility to earlier firmware versions, a parameter value of zero in indices 1 to 31 is overwritten with the parameter value in index 0 when the Control Unit boots.

Note: Standstill is identified in the following cases:

- the speed actual value falls below the speed threshold in p1226 and the time started after this in p1228 has expired.
- the speed setpoint falls below the speed threshold in p1226 and the time started after this in p1227 has expired.

The actual value sensing is subject to measuring noise. For this reason, standstill cannot be detected if the speed threshold is too low.

p1227 Zero speed detection monitoring time / n_standst t_monit

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	300.000 [s]	300.000 [s]

Description: Sets the monitoring time for the standstill identification.

When braking with OFF1 or OFF3, standstill is identified after this time has expired, after the setpoint speed has fallen below p1226 (also refer to p1145).

Dependency: The parameter is pre-assigned depending on the size of the power unit.

Refer to: p1226

Notice: For p1145 > 0.0 (RFG tracking) the setpoint is not equal to zero dependent on the selected value. This can therefore cause the monitoring time in p1227 to be exceeded. In this case, for a driven motor, the pulses are not suppressed.

Note: Standstill is identified in the following cases:

- the speed actual value falls below the speed threshold in p1226 and the time started after this in p1228 has expired.
- the speed setpoint falls below the speed threshold in p1226 and the time started after this in p1227 has expired.

For p1227 = 300.000 s the following applies:

Monitoring is deactivated.

For p1227 = 0.000 s, the following applies:

With OFF1 or OFF3 and a ramp-down time = 0, the pulses are immediately suppressed and the motor "coasts" down.

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

p1228 Pulse suppression delay time / Pulse suppr t_del

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8022
Min	**Max**	**Factory setting**
0.000 [s]	299.000 [s]	0.010 [s]

Description: Sets the delay time for pulse suppression.

After OFF1 or OFF3, the pulses are canceled, if at least one of the following conditions is fulfilled:

- the speed actual value falls below the threshold in p1226 and the time started after this in p1228 has expired.
- the speed setpoint falls below the threshold in p1226 and the time started after this in p1227 has expired.

Dependency: Refer to: p1226, p1227

p1230[0...n] BI: DC braking activation / DC brake act

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7017
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate DC braking.

Dependency: Refer to: p1231, p1232, p1233, p1234, r1239

Note: 1 signal: DC braking activated.

0 signal: DC braking deactivated.

p1231[0...n] DC braking configuration / DCBRK config

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** 7014, 7016, 7017
Min	**Max**	**Factory setting**
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: DCBRK: DC Braking

For 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.

In order that DC braking is active as fault response, the corresponding fault number must be entered in p2100 and fault response p2101 set = 6.

For 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. The system switches back to normal operation if the OFF1 command is withdrawn prematurely (the system waits for demagnetization). Flying restart must be activated if the motor is still rotating.

DC braking by means of fault response continues to be possible.

For 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.

p1232[0...n] DC braking braking current / DCBRK I_brake

Access level: 2	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** 7017
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the braking current for DC braking.

Dependency: Refer to: p1230, p1231, p1233, p1234, r1239, p1345, p1346

Note: A change to the braking current becomes effective the next time that DC braking is switched on.

The value for p1232 is specified as an rms value in the 3-phase system. The magnitude of the braking current is the same as that of an identical output current at frequency zero (see r0067, r0068, p0640). The braking current is internally limited to r0067.

For the current controller, the settings of parameters p1345 and p1346 (I_max limiting controller) are used.

p1233[0...n] DC braking time / DCBRK time

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** 7017
Min	**Max**	**Factory setting**
0.0 [s]	3600.0 [s]	1.0 [s]

Description: Sets the DC braking time (as fault response).

Dependency: Refer to: p1230, p1231, p1232, p1234, r1239

p1234[0...n] Speed at the start of DC braking / DCBRK n_start

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** 7017
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the starting speed for DC braking.

If the actual speed falls below this threshold, then DC braking is activated.

Dependency: Refer to: p1230, p1231, p1232, p1233, r1239

r1239.8...13 CO/BO: DC braking status word / DCBRK ZSW

Access level: 2	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Status word of the DC braking.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Dependency: Refer to: p1231, p1232, p1233, p1234

Note: For bit 12, 13:

Only effective for p1231 = 14.

p1240[0...n] Vdc controller configuration (vector control) / Vdc ctr config vec

PM230

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6220
Min	**Max**	**Factory setting**
0	3	1

Description: Sets the controller configuration of the DC link voltage (Vdc controller) in the closed-loop control mode. For U/f control: see p1280.

Value:
0: Inhibit Vdc ctrl
1: Enable Vdc_max controller
3: Enable Vdc_min controller and Vdc_max controller

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1245

Refer to: A07400, A07401, A07402, F07405, F07406

Notice: An excessively high value in p1245 can possibly negatively influence the normal operation of the drive.

Note: p1240 = 1, 3:

When the DC link voltage limit specified for the 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	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6220, 6827
	Min	**Max**	**Factory setting**
	0	3	1

Description: Sets the controller configuration of the DC link voltage (Vdc controller) in the closed-loop control mode. For U/f control: see p1280.

Value:
0: Inhibit Vdc ctrl
1: Enable Vdc_max controller
2: Enable Vdc_min controller (kinetic buffering)
3: Enable Vdc_min controller and Vdc_max controller

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1245

Refer to: A07400, A07401, A07402, F07405, F07406

Notice: An excessively high value in p1245 can possibly negatively influence the normal operation of the drive.

Note: 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.

r1242 Vdc_max controller switch-in level / Vdc_max on_level

PM230	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
PM240, PM330	**Can be changed:** -	**Scaling:** p2001	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6220
	Min	**Max**	**Factory setting**
	- [V]	- [V]	- [V]

Description: Displays the switch-in level for the Vdc_max controller.

If p1254 = 0 (automatic sensing of the switch-in level = off), then the following applies:

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)

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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 * r1242 and the controller output is zero.

p1243[0...n] Vdc_max controller dynamic factor / Vdc_max dyn_factor

PM230	**Access level:** 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
PM240, PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6220
	Min	**Max**	**Factory setting**
	1 [%]	10000 [%]	100 [%]

Description: Sets the dynamic factor for the DC link voltage controller (Vdc_max controller).

100% means that p1250, p1251, and p1252 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization.

If subsequent optimization is required, this can be carried out using the dynamic factor. In this case p1250, p1251, p1252 are weighted with the dynamic factor p1243.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1245[0...n] Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

PM230	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	65 [%]	150 [%]	73 [%]

Description: Sets the switch-in level for the Vdc-min controller (kinetic buffering).

The value is obtained as follows:

r1246[V] = p1245[%] * sqrt(2) * p0210

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0210

Warning: An excessively high value possibly negatively influences normal drive operation, and can mean that after the line supply returns, the Vdc minimum control can no longer be exited.

p1245[0...n] Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

PM240	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	65 [%]	150 [%]	76 [%]

Description: Sets the switch-in level for the Vdc-min controller (kinetic buffering).

The value is obtained as follows:

r1246[V] = p1245[%] * sqrt(2) * p0210

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0210

Warning: An excessively high value possibly negatively influences normal drive operation, and can mean that after the line supply returns, the Vdc minimum control can no longer be exited.

r1246 Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level

PM230
PM240, PM330

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6220
Min	**Max**	**Factory setting**
- [V]	- [V]	- [V]

Description: Displays the switch-in level for the Vdc_min controller (kinetic buffering).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: The Vdc_min controller is not switched back off until the DC link voltage rises above the threshold 1.05 * p1246 and the controller output is zero.

p1247[0...n] Vdc_min controller dynamic factor (kinetic buffering) / Vdc_min dyn_factor

PM230
PM240, PM330

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6220
Min	**Max**	**Factory setting**
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.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1249[0...n] Vdc_max controller speed threshold / Vdc_max n_thresh

PM230
PM240, PM330

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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.

p1249[0...n] Vdc_max controller speed threshold / Vdc_max n_thresh

PM250
PM260

Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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.

p1250[0...n] Vdc controller proportional gain / Vdc_ctrl Kp

PM230	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
PM240, PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	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.

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1251[0...n] Vdc controller integral time / Vdc_ctrl Tn

PM230	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
PM240, PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6220
	Min	**Max**	**Factory setting**
	0 [ms]	10000 [ms]	0 [ms]

Description: Sets the integral time for the DC link voltage controller (Vdc_min controller, Vdc_max controller).

Dependency: The effective integral time is obtained taking into account p1243 (Vdc_max controller dynamic factor).

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: p1251 = 0: The integral component is deactivated.

p1252[0...n] Vdc controller rate time / Vdc_ctrl t_rate

PM230	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
PM240, PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6220
	Min	**Max**	**Factory setting**
	0 [ms]	1000 [ms]	0 [ms]

Description: Sets the rate time constant for the DC link voltage controller (Vdc_min controller, Vdc_max controller).

Dependency: The effective rate time is obtained taking into account p1243 (Vdc_max controller dynamic factor).

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1254 Vdc_max controller automatic ON level detection / Vdc_max SenseOnLev

PM230	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	1	0

Description: Activates/deactivates the automatic sensing of the switch-in level for the Vdc_max controller.

Value:
0: Automatic detection inhibited
1: Automatic detection enabled

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1254 Vdc_max controller automatic ON level detection / Vdc_max SenseOnLev

PM240	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	1	1

Description: Activates/deactivates the automatic sensing of the switch-in level for the Vdc_max controller.

Value:
0: Automatic detection inhibited
1: Automatic detection enabled

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1255[0...n] Vdc_min controller time threshold / Vdc_min t_thresh

PM230 PM240, PM330	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0.000 [s]	1800.000 [s]	0.000 [s]

Description: Sets the time threshold for the Vdc_min controller (kinetic buffering).

If this value is exceeded a fault is output; the required response can be parameterized.

Prerequisite: p1256 = 1

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: F07406

Notice: If a time threshold has been parameterized, the Vdc_max controller should also be activated (p1240 = 3) so that the drive does not shut down with overvoltage when Vdc_min control is exited (due to the time violation) and in the event of fault response OFF3. It is also possible to increase the OFF3 ramp-down time p1135.

p1256[0...n] Vdc_min controller response (kinetic buffering) / Vdc_min response

PM230 PM240, PM330	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	1	0

Description: Sets the response for the Vdc_min controller (kinetic buffering).

Value:
0: Buffer Vdc until undervoltage, n<p1257 -> F07405
1: Buff. Vdc until undervolt., n<p1257 -> F07405, t>p1255 -> F07406

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: F07405, F07406

p1257[0...n] Vdc_min controller speed threshold / Vdc_min n_thresh

PM230 PM240, PM330	**Access level:** 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0.00 [rpm]	210000.00 [rpm]	50.00 [rpm]

Description: Sets the speed threshold for the Vdc-min controller (kinetic buffering).

If this value is exceeded a fault is output; the required response can be parameterized .

Kinetic buffering is not started below the speed threshold.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: 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.

r1258 CO: Vdc controller output / Vdc_ctrl output

PM230 PM240, PM330	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
	Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 6220
	Min	**Max**	**Factory setting**
	- [Arms]	- [Arms]	- [Arms]

Description: Displays the actual output of the Vdc controller (DC link voltage controller)

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: The regenerative power limit p1531 is used for vector control to precontrol 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.

p1260 Bypass configuration / Bypass config

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the configuration for the bypass function.

Value:
0: Bypass deactivated
3: Bypass without synchronization

Dependency: The "Bypass" function is only available for induction motors.

Note: When the converter is switched on, the state of the bridging contactor is evaluated.

If the automatic restart is active (p1210 = 4) and both an ON command (r0054.0 = 1) and the bypass signal (p1266 = 1, configuration p1267.0 = 1) are still present during power up, the converter goes into "ready for operation and bypass" state (r0899.0 = 1 and r0046.25 = 1) after power up, and the motor continues to run directly on the line.

The "bypass" function can only be switched off again (p1260 = 0) if the bypass is not active or the bypass function has a fault.

The "flying restart" function must be activated (p1200).

r1261.0...11 CO/BO: Bypass control/status word / Bypass STW / ZSW

Access level: 2	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Control and feedback signals of the bypass switch.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Command switch motor - power unit	Close	Open	-
01	Command switch motor - line supply	Close	Open	-
05	Feedback signal switch motor - power unit	Closed	Opened	-
06	Feedback signal switch motor - line supply	Closed	Opened	-
07	Bypass command (from p1266)	Yes	No	-
10	Bypass in process sequence	Yes	No	-
11	Bypass enabled	Yes	No	-

Dependency: The "Bypass" function is only available for induction motors.

Note: Control bits 0 and 1 should be interconnected to the signal outputs via which the switches in the motor feeder cables should be controlled. These should be selected/dimensioned for switching under load.

p1262[0...n] Bypass dead time / Bypass t_dead

Access level: 2	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	20.000 [s]	1.000 [s]

Description: Sets the dead time for non-synchronized bypass.

Dependency: The "Bypass" function is only available for induction motors.

Note: This parameter is used to define the changeover time of the contactors. It should not be shorter than the de-magnetizing time of the motor (p0347).

The total changeover time for the bypass is based on the total of p1262 plus the OFF time for the relevant switch (p1274[x]).

p1263 Debypass delay time / Debypass t_del

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	300.000 [s]	1.000 [s]

Description: Sets the delay time to switch back to converter operation for a non-synchronized bypass.

Dependency: The "Bypass" function is only available for induction motors.

p1264 Bypass delay time / Bypass t_del

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	300.000 [s]	1.000 [s]

Description: Sets the delay time for switching to line operation for a non-synchronized bypass.

Dependency: The "Bypass" function is only available for induction motors.

p1265 Bypass speed threshold / Bypass n_thresh

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	1480.00 [rpm]

Description: Sets the speed threshold to activate the bypass.

Dependency: The "Bypass" function is only available for induction motors.

If the drive setpoint speed is entered via a motorized potentiometer, then the configuration bit p1030.4 should be set in order to ensure the bypass via speed threshold function.

Note: When selecting p1260 = 3 and p1267.1 = 1, the bypass is automatically activated when this speed is reached.

The bypass speed threshold is only effective for positive directions of rotation. If the drive connected to the line supply requires negative speeds, then this can be achieved using p1820 (direction of rotation reversal).

p1266 BI: Bypass control command / Bypass command

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the control command to the bypass.

Dependency: The "Bypass" function is only available for induction motors.

p1267 Bypass changeover source configuration / Chngov_src config

Access level: 2	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the cause that should initiate the bypass.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bypass via signal (BI: p1266)	Yes	No	-
01	Bypass via reaching the speed threshold	Yes	No	-

Dependency: The "Bypass" function is only available for induction motors.

Note: The parameter only has an effect for a non-synchronized bypass.

p1267.0 = 1:

The bypass is initiated by setting a binary signal. When the command is reset, after the debypass delay time (p1263) has expired, operation at the power unit is re-selected.

p1267.1 = 1:

When the speed threshold entered in p1265 is reached, the bypass is switched in. The system only switches back when the speed setpoint again falls below the threshold value.

p1269[0...1] BI: Bypass switch feedback signal / Bypass FS

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	[0] 1261.0 [1] 1261.1

Description: Sets the signal source for the feedback signal of the bypass switch.

Index:
[0] = Switch motor/drive
[1] = Switch motor/line supply

Dependency: The "Bypass" function is only available for induction motors.

Note: In the case of switches without a feedback signal, interconnect the corresponding control bit as the signal source:

BI: p1269[0] = r1261.0

BI: p1269[1] = r1261.1

Entering p1269 = 0 sets this interconnection automatically for switches without a feedback signal.

p1270[0...n] Flying restart configuration / Fly restart config

PM330

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0011 bin

Description: Sets the configuration for the "flying restart function" function.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fast flying restart with voltage model for induction motor	Yes	No	-
01	PLL expansion for fast flying restart w/ voltage model for ASM	Yes	No	-
12	Use peak current values	Yes	No	-
13	Number of current controller cycles (test pulse) bit 0	1	0	-
14	Number of current controller cycles (test pulse) bit 1	1	0	-
15	Number of current controller cycles (test pulse) bit 2	1	0	-

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Note: ASM: Induction motor

For bit 00:

This bit is equivalent to p1780 bit 11.

For bit 01:

This bit should only be set when required for large drives.

p1271[0...n] Flying restart maximum frequency for the inhibited direction / FlyRes f_max dir

PM230
PM240
PM250, PM260

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [Hz]	650 [Hz]	0 [Hz]

Description: Sets the maximum search frequency for a flying restart in an inhibited setpoint direction (p1110, p1111).

Note: The parameter has no effect for an operating mode, which only searches in the setpoint direction (p1200 > 3).

p1271[0...n] Flying restart maximum frequency for the inhibited direction / FlyRes f_max dir

PM330

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [Hz]	650 [Hz]	5 [Hz]

Description: Sets the maximum search frequency for a flying restart in an inhibited setpoint direction (p1110, p1111).

Note: The parameter has no effect for an operating mode, which only searches in the setpoint direction (p1200 > 3).

p1274[0...1] Bypass switch monitoring time / Switch t_monit

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [ms]	5000 [ms]	1000 [ms]

Description: Sets the monitoring time for the bypass switch.

Index:
[0] = Switch motor/drive
[1] = Switch motor/line supply

Dependency: The "Bypass" function is only available for induction motors.

Note: The monitoring is deactivated with p1274 = 0 ms.

The changeover time for the bypass (p1262) is extended by the value in this parameter.

p1280[0...n] Vdc controller configuration (U/f) / Vdc_ctr config U/f

PM230

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6320
Min	**Max**	**Factory setting**
0	1	1

Description: Sets the configuration of the controller for the DC link voltage (Vdc controller) in the U/f operating mode.

Value:
0: Inhibit Vdc ctrl
1: Enable Vdc_max controller

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

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 PM330			
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6320, 6854
	Min	**Max**	**Factory setting**
	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: Inhibit Vdc ctrl
1: Enable Vdc_max controller
2: Enable Vdc_min controller (kinetic buffering)
3: Enable Vdc_min controller and Vdc_max controller

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

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.

p1281[0...n] Vdc controller configuration / Vdc ctrl config

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the DC link voltage controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Vdc min control (U/f) without up ramp	Yes	No	-
02	Vdc min shorter wait time when the line returns	Yes	No	-

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Note: For bit 00:

Deactivate the ramp-up for Vdc_min control.

For drives with a mechanical system that can oscillate and high moment of inertia, the speed can be more quickly tracked.

For bit 02:

When the line supply returns, normal operation is resumed earlier, and the system does not wait until the Vdc min controller reaches the setpoint speed.

r1282 Vdc_max controller switch-in level (U/f) / Vdc_max on_level

PM230 PM240, PM330			
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6320, 6854
	Min	**Max**	**Factory setting**
	- [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 V (Vdc_max: Overvoltage threshold of the power unit)

r1282 = Vdc_max - 25.0 V (for 230 V power units)

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

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.

p1283[0...n] Vdc_max controller dynamic factor (U/f) / Vdc_max dyn_factor

PM230 PM240, PM330			
	Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6320, 6854
	Min	**Max**	**Factory setting**
	1 [%]	10000 [%]	100 [%]

Description: Sets the dynamic factor for the DC link voltage controller (Vdc_max controller).

100% means that p1290, p1291, and p1292 (gain, integral time, and rate time) are used in accordance with their basic settings and on the basis of a theoretical controller optimization.

If subsequent optimization is required, this can be carried out using the dynamic factor. In this case, p1290, p1291, and p1292 are weighted with the dynamic factor p1283.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

p1284[0...n] Vdc_max controller time threshold (U/f) / Vdc_max t_thresh

PM230 PM240, PM330			
	Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0.000 [s]	300.000 [s]	4.000 [s]

Description: 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.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

p1285[0...n] Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level

PM240 PM330			
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6320, 6854
	Min	**Max**	**Factory setting**
	65 [%]	150 [%]	76 [%]

Description: Sets the switch-in level for the Vdc-min controller (kinetic buffering).

The value is obtained as follows:

r1286[V] = p1285[%] * sqrt(2) * p0210

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Warning: An excessively high value may adversely affect normal drive operation.

r1286 Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level

PM240	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
PM330	**Can be changed:** -	**Scaling:** p2001	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6320, 6854
	Min	**Max**	**Factory setting**
	- [V]	- [V]	- [V]

Description: Displays the switch-in level for the Vdc_min controller (kinetic buffering).

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Note: The Vdc_min controller is not switched back off until the DC link voltage rises above the threshold 1.05 * r1286 and the controller output is zero.

p1287[0...n] Vdc_min controller dynamic factor (kinetic buffering) (U/f) / Vdc_min dyn_factor

PM240	**Access level:** 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6320, 6854
	Min	**Max**	**Factory setting**
	1 [%]	10000 [%]	100 [%]

Description: Sets the dynamic factor for the Vdc_min controller (kinetic buffering).

100% means that p1290, p1291, and p1292 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization.

If subsequent optimization is required, this can be carried out using the dynamic factor. In this case, p1290, p1291, and p1292 are weighted with the dynamic factor p1287.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

p1290[0...n] Vdc controller proportional gain (U/f) / Vdc_ctrl Kp

PM230	**Access level:** 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
PM240, PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6320, 6854
	Min	**Max**	**Factory setting**
	0.00	100.00	1.00

Description: Sets the proportional gain for the Vdc controller (DC link voltage controller).

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Note: The gain factor is proportional to the capacitance of the DC link.

The parameter is pre-set to a value that is optimally adapted to the capacitance of the power unit.

p1291[0...n] Vdc controller integral time (U/f) / Vdc_ctrl Tn

PM230	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
PM240, PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6320, 6854
	Min	**Max**	**Factory setting**
	0 [ms]	10000 [ms]	40 [ms]

Description: Sets the integral time for the Vdc controller (DC link voltage controller).

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

p1292[0...n] Vdc controller rate time (U/f) / Vdc_ctrl t_rate

PM230	**Access level:** 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
PM240, PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6320, 6854
	Min	**Max**	**Factory setting**
	0 [ms]	1000 [ms]	10 [ms]

Description: Sets the rate time constant for the Vdc controller (DC link voltage controller).

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

p1294 Vdc_max controller automatic detection ON signal level (U/f) / Vdc_max SenseOnLev

PM230	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
PM240, PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6320, 6854
	Min	**Max**	**Factory setting**
	0	1	0

Description: Activates/deactivates the automatic sensing of the switch-in level for the Vdc_max controller. When the sensing function is deactivated, the activation threshold r1282 for the Vdc_max controller is determined from the parameterized connection voltage p0210.

Value:
0: Automatic detection inhibited
1: Automatic detection enabled

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

p1295[0...n] Vdc_min controller time threshold (U/f) / Vdc_min t_thresh

PM240	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0.000 [s]	10000.000 [s]	0.000 [s]

Description: Sets the time threshold for the Vdc_min controller (kinetic buffering).

If this value is exceeded a fault is output; the required response can be parameterized.

Prerequisite: p1296 = 1

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Notice: If a time threshold has been parameterized, the Vdc_max controller should also be activated (p1280 = 3) so that the drive does not shut down with overvoltage when Vdc_min control is exited (due to the time violation) and in the event of fault response OFF3. It is also possible to increase the OFF3 ramp-down time p1135.

p1296[0...n] Vdc_min controller response (kinetic buffering) (U/f) / Vdc_min response

PM240	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
PM330	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	1	0

Description: Sets the response for the Vdc_min controller (kinetic buffering).

Value:
0: Buffer Vdc until undervoltage, n<p1297 -> F07405
1: Buff. Vdc until undervolt., n<p1297 -> F07405, t>p1295 -> F07406

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Note: For 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 PM330	**Access level:** 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0.00 [rpm]	210000.00 [rpm]	50.00 [rpm]

Description: Sets the speed threshold for the Vdc-min controller (kinetic buffering).

If this value is exceeded a fault is output; the required response can be parameterized .

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Note: 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 PM240, PM330	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
	Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 6320, 6854
	Min	**Max**	**Factory setting**
	- [rpm]	- [rpm]	- [rpm]

Description: Displays the actual output of the Vdc controller (DC link voltage controller)

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

p1300[0...n]	Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode		
PM230	**Access level:** 2	**Calculated:** -	**Data type:** Integer16
	Can be changed: C(1), T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6301, 8012
	Min	**Max**	**Factory setting**
	0	20	2

Description: Sets the open and closed-loop control mode of a drive.

Value:
0: U/f control with linear characteristic
1: U/f control with linear characteristic and FCC
2: U/f control with parabolic characteristic
4: U/f control with linear characteristic and ECO
7: U/f control for a parabolic characteristic and ECO
20: Speed control (encoderless)

Dependency: Only operation with U/f characteristic is possible if the rated motor speed is not entered (p0311). The output voltage is used for efficiency optimization for all U/f control types, load-dependent (see p0500 = 3).

Refer to: p0300, p0311, p0500

Notice: Active slip compensation is required in the U/f control types with Eco mode (p1300 = 4, 7). The scaling of the slip compensation (p1335) should be set so that the slip is completely compensated (generally 100%).

The Eco mode is only effective in steady-state operation and when the ramp-function generator is not bypassed. In the case of analog setpoints, if required the tolerance for ramp-up and ramp-down should be actively increased for the ramp-function generator using p1148 in order to reliably signal a steady-state condition.

p1300[0...n]	Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode		
PM240 PM250, PM260	**Access level:** 2	**Calculated:** -	**Data type:** Integer16
	Can be changed: C(1), T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6301, 6851, 8012
	Min	**Max**	**Factory setting**
	0	20	0

Description: Sets the open and closed-loop control mode of a drive.

Value:
0: U/f control with linear characteristic
1: U/f control with linear characteristic and FCC
2: U/f control with parabolic characteristic

4: U/f control with linear characteristic and ECO
7: U/f control for a parabolic characteristic and ECO
20: Speed control (encoderless)

Dependency: For Standard Drive Control (p0096 = 1), settings p1300 = 0, 2 are possible, for Dynamic Drive Control (p0096 = 2) only p1300 = 20 can be set.

Only operation with U/f characteristic is possible if the rated motor speed is not entered (p0311).

Refer to: p0300, p0311, p0500

Notice: Active slip compensation is required in the U/f control types with Eco mode (p1300 = 4, 7). The scaling of the slip compensation (p1335) should be set so that the slip is completely compensated (generally 100%).

The Eco mode is only effective in steady-state operation and when the ramp-function generator is not bypassed. In the case of analog setpoints, if required the tolerance for ramp-up and ramp-down should be actively increased for the ramp-function generator using p1148 in order to reliably signal a steady-state condition.

Note: For motors, type p0300 = 6 and 6xx, operation with U/f control is only recommended for diagnostic purposes.

p1300[0...n] Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode

PM330

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1), T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6301, 6851, 8012
Min	**Max**	**Factory setting**
0	20	20

Description: Sets the open and closed-loop control mode of a drive.

Value:
0: U/f control with linear characteristic
1: U/f control with linear characteristic and FCC
2: U/f control with parabolic characteristic
4: U/f control with linear characteristic and ECO
7: U/f control for a parabolic characteristic and ECO
20: Speed control (encoderless)

Dependency: For Dynamic Drive Control (p0096 = 2), only p1300 = 20 can be set.

Only operation with U/f characteristic is possible if the rated motor speed is not entered (p0311).

Refer to: p0300, p0311, p0500

Notice: Active slip compensation is required in the U/f control types with Eco mode (p1300 = 4, 7). The scaling of the slip compensation (p1335) should be set so that the slip is completely compensated (generally 100%).

The Eco mode is only effective in steady-state operation and when the ramp-function generator is not bypassed. In the case of analog setpoints, if required the tolerance for ramp-up and ramp-down should be actively increased for the ramp-function generator using p1148 in order to reliably signal a steady-state condition.

Note: For motors, type p0300 = 14, operation with U/f control is only recommended for diagnostic purposes.

p1302[0...n] U/f control configuration / U/f config

PM240
PM330

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration for the U/f control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	Field orientation	Yes	No	-
05	Starting current when accelerating without flux boost	Yes	No	-
07	Inhibit Iq,max controller I component	Yes	No	-
08	Saturation characteristic for the starting current	Yes	No	-
09	Current boost for fast magnetization	Yes	No	-

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Notice: p1302 bit 5 = 1: (only for field orientation p1302 bit 4 = 1)

This setting is only selected for very fast acceleration.

Note: For bit 04:

Field orientation for the closed-loop control of application class Standard Drive Control (p0096 = 1). The field orientation is activated with the automatic calculation if p0096 is set = 1.

For 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. p1302.5 - in conjunction with p1310 and p1311 - are decisive when it comes to defining the quality of the starting response.

For bit 07:

For field orientation (bit04 = 1), an Iq,max controller supports the current limiting controller (see p1341). Inhibiting the integral component can prevent the drive from stalling under overload conditions.

For bit 08:

Taking into account the saturation characteristic can be activated to improve faster starting operations for high-rating motors.

For bit 09:

For field orientation (bit04 = 1), while the induction motor is being magnetized, the current is automatically increased if the magnetization time p0346 is shortened.

p1310[0...n] Starting current (voltage boost) permanent / I_start (Ua) perm

PM230
PM250, PM260

Access level: 2	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6301
Min	**Max**	**Factory setting**
0.0 [%]	250.0 [%]	50.0 [%]

Description: Defines the voltage boost as a [%] referred to the rated motor current (p0305).

The magnitude of the permanent voltage boost is reduced with increasing frequency so that at the rated motor frequency, the rated motor voltage is present.

The magnitude of the boost in Volt at a frequency of zero is defined as follows:

Voltage boost [V] = 1.732 x p0305 (rated motor current [A]) x r0395 (stator/primary section resistance [ohm]) x p1310 (permanent voltage boost [%]) / 100 %

At low output frequencies, there is only a low output voltage in order to maintain the motor flux. However, the output voltage can be too low in order to achieve the following:

- magnetize the induction motor.
- hold the load.
- compensate for losses in the system.

This is the reason that the output voltage can be increased using p1310.

The voltage boost can be used for both linear as well as square-law U/f characteristics.

Dependency: The starting current (voltage boost) is limited by the current limit p0640.

Only for p1302.4 = 0 (no field orientation):

The accuracy of the starting current depends on the setting of the stator and feeder cable resistance (p0350, p0352).

For vector control, the starting current is realized using p1610.

Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1300, p1311, p1312, r1315

Notice: The starting current (voltage boost) increases the motor temperature (particularly at zero speed).

Note: 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 > p1311, p1312

p1310[0...n] Starting current (voltage boost) permanent / I_start (Ua) perm

PM240
PM330

Access level: 2	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6301, 6851
Min	**Max**	**Factory setting**
0.0 [%]	250.0 [%]	50.0 [%]

Description: Defines the voltage boost as a [%] referred to the rated motor current (p0305).

The magnitude of the permanent voltage boost is reduced with increasing frequency so that at the rated motor frequency, the rated motor voltage is present.

The magnitude of the boost in Volt at a frequency of zero is defined as follows:

Voltage boost [V] = 1.732 x p0305 (rated motor current [A]) x r0395 (stator/primary section resistance [ohm]) x p1310 (permanent voltage boost [%]) / 100 %

At low output frequencies, there is only a low output voltage in order to maintain the motor flux. However, the output voltage can be too low in order to achieve the following:

- magnetize the induction motor.
- hold the load.
- compensate for losses in the system.

This is the reason that the output voltage can be increased using p1310.

The voltage boost can be used for both linear as well as square-law U/f characteristics.

For field orientation (p1302.4 = 1, default setting for Standard Drive Control p0096 = 1), in the vicinity of low output frequencies, a minimum current is impressed with the magnitude of the rated magnetizing current. In this case, 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.

Dependency: The starting current (voltage boost) is limited by the current limit p0640.

Only for p1302.4 = 0 (no field orientation):

The accuracy of the starting current depends on the setting of the stator and feeder cable resistance (p0350, p0352).

For vector control, the starting current is realized using p1610.

Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1300, p1311, p1312, r1315

Notice: The starting current (voltage boost) increases the motor temperature (particularly at zero speed).

Note: 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 > p1311, p1312

For field orientation (p1302 bit 4 = 1, not PM230, PM250, PM260), then p1310 together with p1311 and p1302.5 are mainly responsible for the quality of the drive response.

p1311[0...n] Starting current (voltage boost) when accelerating / I_start accel

PM230
PM250, PM260

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6301
Min	**Max**	**Factory setting**
0.0 [%]	250.0 [%]	0.0 [%]

Description: p1311 only results in a voltage boost when accelerating and generates a supplementary torque to accelerate the load.

The voltage boost becomes effective for a positive setpoint increase and disappears as soon as the setpoint has been reached. The build-up and withdrawal of the voltage boost are smoothed.

The magnitude of the boost in Volt at a frequency of zero is defined as follows (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 %

Dependency: The current limit p0640 limits the boost.

For vector control, the starting current is realized using p1611.

Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1300, p1310, p1312, r1315

Notice: The voltage boost results in a higher motor temperature increase.

Note: The voltage boost when accelerating can improve the response to small, positive setpoint changes.

Assigning priorities for the voltage boosts: refer to p1310

p1311[0...n] Starting current (voltage boost) when accelerating / I_start accel

PM240
PM330

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6301, 6851
Min	**Max**	**Factory setting**
0.0 [%]	250.0 [%]	0.0 [%]

Description: p1311 only results in a voltage boost when accelerating and generates a supplementary torque to accelerate the load.

The voltage boost becomes effective for a positive setpoint increase and disappears as soon as the setpoint has been reached. The build-up and withdrawal of the voltage boost are smoothed.

The magnitude of the boost in Volt at a frequency of zero is defined as follows (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 %

Dependency: The current limit p0640 limits the boost.

For field orientation (p1302 bit 4 = 1, not PM230, PM250, PM260), p1311 is pre-assigned by the automatic calculation.

For vector control, the starting current is realized using p1611.

Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1300, p1310, p1312, r1315

Notice: The voltage boost results in a higher motor temperature increase.

Note: The voltage boost when accelerating can improve the response to small, positive setpoint changes.

Assigning priorities for the voltage boosts: refer to p1310

For field orientation (p1302 bit 4 = 1, not PM230, PM250, PM260), then p1311 together with p1310 and p1302.5 are mainly responsible for the quality of the drive response.

p1312[0...n] Starting current (voltage boost) when starting / I_start start

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6301, 6851
Min	**Max**	**Factory setting**
0.0 [%]	250.0 [%]	0.0 [%]

Description: Setting for an additional voltage boost when powering-up, however, only for the first acceleration phase.

The voltage boost becomes effective for a positive setpoint increase and disappears as soon as the setpoint has been reached. The build-up and withdrawal of the voltage boost are smoothed.

Dependency: The current limit p0640 limits the boost.

Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1300, p1310, p1311, r1315

Notice: The voltage boost results in a higher motor temperature increase.

Note: The voltage boost when accelerating can improve the response to small, positive setpoint changes.

Assigning priorities for the voltage boosts: refer to p1310

For field orientation (p1302.4 = 1, not PM230, PM250, PM260), p1312 of the voltage boost is also added in the direction of the load current (non-linear).

r1315 Voltage boost total / U_boost total

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6301, 6851
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the total resulting voltage boost in volt.

For field orientation (p1302.4 = 1, not for PM230, PM250, PM260), at low speeds, as a minimum the magnetizing current is set, so that the voltage depends on r0331.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1310, p1311, p1312

p1331[0...n] Voltage limiting / U_lim

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 5_1	**Unit selection:** p0505	**Func. diagram:** 6300
Min	**Max**	**Factory setting**
50.00 [Vrms]	2000.00 [Vrms]	1000.00 [Vrms]

Description: 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.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Note: The output voltage is only limited if, as a result of p1331, the maximum output voltage (r0071) is fallen below.

p1333[0...n] U/f control FCC starting frequency / U/f FCC f_start

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6301
Min	**Max**	**Factory setting**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: Sets the starting frequency at which FCC (Flux Current Control) is activated.

Dependency: The correct operating mode must be set (p1300 = 1, 6).

Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Warning: An excessively low value can result in instability.

Note: For p1333 = 0 Hz, the FCC starting frequency is automatically set to 6 % of the rated motor frequency.

p1334[0...n] U/f control slip compensation starting frequency / Slip comp start

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6310, 6853
Min	**Max**	**Factory setting**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: Sets the starting frequency of the slip compensation.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Note: For p1334 = 0, the starting frequency of the slip compensation is automatically set to 6 % of the rated motor frequency.

p1335[0...n] Slip compensation scaling / Slip comp scal

PM230
PM250, PM260

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6310, 6853
Min	**Max**	**Factory setting**
0.0 [%]	600.0 [%]	0.0 [%]

Description: Sets the setpoint for slip compensation in [%] referred to r0330 (motor rated slip).

p1335 = 0.0 %: Slip compensation deactivated.

p1335 = 100.0 %: The slip is completely compensated.

Dependency: Prerequisite for a precise slip compensation for p1335 = 100 % are the precise motor parameters (p0350 ... p0360).

If the parameters are not precisely known, a precise compensation can be achieved by varying p1335.

For U/f control types with Eco optimization (4 and 7), the slip compensation must be activated in order to guarantee correct operation.

Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

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).

p1335[0...n] Slip compensation scaling / Slip comp scal

PM240			
	Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6310, 6853
	Min	**Max**	**Factory setting**
	0.0 [%]	600.0 [%]	0.0 [%]

Description: Sets the setpoint for slip compensation in [%] referred to r0330 (motor rated slip).

p1335 = 0.0 %: Slip compensation deactivated.

p1335 = 100.0 %: The slip is completely compensated.

Dependency: Prerequisite for a precise slip compensation for p1335 = 100 % are the precise motor parameters (p0350 ... p0360).

If the parameters are not precisely known, a precise compensation can be achieved by varying p1335.

For U/f control types with Eco optimization (4 and 7), the slip compensation must be activated in order to guarantee correct operation.

For p0096 = 1 (Standard Drive Control), the scaling of the slip compensation is set as default to 100%.

Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

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).

p1335[0...n] Slip compensation scaling / Slip comp scal

PM330			
	Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6310
	Min	**Max**	**Factory setting**
	0.0 [%]	600.0 [%]	100.0 [%]

Description: Sets the setpoint for slip compensation in [%] referred to r0330 (motor rated slip).

p1335 = 0.0 %: Slip compensation deactivated.

p1335 = 100.0 %: The slip is completely compensated.

Dependency: Prerequisite for a precise slip compensation for p1335 = 100 % are the precise motor parameters (p0350 ... p0360).

If the parameters are not precisely known, a precise compensation can be achieved by varying p1335.

For U/f control types with Eco optimization (4 and 7), the slip compensation must be activated in order to guarantee correct operation.

Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

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).

p1336[0...n] Slip compensation limit value / Slip comp lim val

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6310, 6853
Min	**Max**	**Factory setting**
0.00 [%]	600.00 [%]	250.00 [%]

Description: Sets the limit value for slip compensation in [%] referred to r0330 (motor rated slip).

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

r1337 CO: Actual slip compensation / Slip comp act val

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6310, 6853
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the actual compensated slip [%] referred to r0330 (rated motor slip).

Dependency: p1335 > 0 %: Slip compensation active.

Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1335

p1338[0...n] U/f mode resonance damping gain / Uf Res_damp gain

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6310, 6853
Min	**Max**	**Factory setting**
0.00	100.00	0.00

Description: Sets the gain for resonance damping for U/f control.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1300, p1339, p1349

Note: The resonance damping function dampens active current oscillations that frequency occur under no-load conditions.

The resonance damping is active in a range from approximately 6 % of the rated motor frequency (p0310). The shutoff frequency is determined by p1349.

For the open-loop control modes p1300 = 5 and 6 (textile sectors), the resonance damping is internally disabled in order that the output frequency can be precisely set.

p1339[0...n] U/f mode resonance damping filter time constant / Uf Res_damp T

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6310, 6853
Min	**Max**	**Factory setting**
1.00 [ms]	1000.00 [ms]	20.00 [ms]

Description: Sets the filter time constant for resonance damping for U/f control.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1300, p1338, p1349

p1340[0...n] I_max frequency controller proportional gain / I_max_ctrl Kp

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300
Min	**Max**	**Factory setting**
0.000	0.500	0.000

Description: Sets the proportional gain of the I_max frequency controller.

The I_max controller reduces the drive converter output current if the maximum current (r0067) is exceeded.

In the U/f operating modes (p1300) for the I_max control, one controller is used that acts on the output frequency and one controller that acts on the output voltage. The frequency controller reduces the current by decreasing the converter output frequency. The frequency is reduced down to a minimum value (equaling twice rated slip). If the overcurrent condition cannot be successfully resolved using this measure, then the drive converter output voltage is reduced using the I_max voltage controller. Once the overcurrent condition has been resolved, the drive is accelerated along the ramp set in p1120 (ramp-up time).

Dependency: In the U/f modes (p1300) for textile applications and for external voltage setpoints, only the I_max voltage controller is used.

Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Notice: When deactivating 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.

Note: The I_max limiting controller becomes ineffective if the ramp-function generator is deactivated with p1122 = 1.

p1341 = 0:

I_max frequency controller deactivated and I_max voltage controller activated over the complete speed range.

p1341[0...n] I_max frequency controller integral time / I_max_ctrl Tn

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6850
Min	**Max**	**Factory setting**
0.000 [s]	50.000 [s]	0.300 [s]

Description: Sets the integral time for the I_max frequency controller.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1340

Note: When p1341 = 0, the current limiting controller influencing the frequency is deactivated 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 deactivated with p1340 = p1341 = 0.

r1343 CO: I_max controller frequency output / I_max_ctrl f_outp

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 6300, 6850
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the effective frequency limit.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1340

r1344 I_max controller voltage output / I_max_ctrl U_outp

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
Unit group: 5_1	**Unit selection:** p0505	**Func. diagram:** 6300
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the amount by which the converter output voltage is reduced.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1340

p1345[0...n] I_max voltage controller proportional gain / I_max_U_ctrl Kp

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 7017
Min	**Max**	**Factory setting**
0.000	100000.000	0.000

Description: Sets the proportional gain for the I_max voltage controller.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1340

Note: The controller settings are also used in the current controller of the DC braking (refer to p1232).

p1346[0...n] I_max voltage controller integral time / I_max_U_ctrl Tn

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 7017
Min	**Max**	**Factory setting**
0.000 [s]	50.000 [s]	0.030 [s]

Description: Sets the integral time for the I_max voltage controller.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1340

Note: The controller settings are also used in the current controller of the DC braking (refer to p1232).

For p1346 = 0, the following applies:

The integral time of the I_max voltage controller is deactivated.

r1348 CO: U/f control Eco factor actual value / U/f Eco fac act v

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6300, 6301
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the economic factor determined for optimizing motor consumption.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1335

Note: The value is only determined for operating modes with Economic (p1300 = 4, 7).

p1349[0...n] U/f mode resonance damping maximum frequency / Uf res_damp f_max

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6310
Min	**Max**	**Factory setting**
0.00 [Hz]	3000.00 [Hz]	0.00 [Hz]

Description: Sets the maximum output frequency for resonance damping for U/f control.

Resonance damping is inactive above this output frequency.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1338, p1339

Note: For p1349 = 0, the changeover limit is automatically set to 95 % of the rated motor frequency - however, to a max. of 45 Hz.

p1382[0...n] Saturation limit for flux setpoint / Max FluxSaturation

PM240

Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
100 [%]	130 [%]	100 [%]

Description: Maximum flux setpoint (saturation limit) for calculating the EMF in the range of the impressed starting current.

Dependency: Not visible with application class: "Dynamic Drive Control" (DDC, p0096 = 2)

p1400[0...n] Speed control configuration / n_ctrl config

PM230
PM240
PM250, PM260

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6490
Min	**Max**	**Factory setting**
-	-	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
05	Kp/Tn adaptation active	Yes	No	6040
15	Sensorless vector control speed precontrol	Yes	No	6030
16	I component for limiting	Enable	Hold	6030
18	Reserved	-	-	-
19	Anti-windup for integral component	Yes	No	6030
20	Acceleration model	ON	OFF	6031
22	Reserved	-	-	-
25	Acceleration torque instantaneous in the I/f mode	Yes	No	-

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: For bit 16:

When the bit is set, the integral component of the speed controller is only held if it reaches the torque limit.

For bit 19, 20:

When this bit is set, speed overshoots when accelerating along the torque limit and for load surges are reduced.

For bit 20:

The acceleration model for the speed setpoint is only active if p1496 is not zero.

For bit 25:

When the bit is set, for high dynamic starting in the I/f mode, the acceleration precontrol torque smoothing only has a short minimum time (4 ms).

p1400[0...n] Speed control configuration / n_ctrl config

PM330

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6490
Min	**Max**	**Factory setting**
-	-	0000 0000 0011 1000 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
05	Kp/Tn adaptation active	Yes	No	6040
15	Sensorless vector control speed precontrol	Yes	No	6030
16	I component for limiting	Enable	Hold	6030
18	Reserved	-	-	-
19	Anti-windup for integral component	Yes	No	6030
20	Acceleration model	ON	OFF	6031
21	Free Tn reduction active	Yes	No	6030
22	Reserved	-	-	-
25	Acceleration torque instantaneous in the I/f mode	Yes	No	-

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: For bit 16:

When the bit is set, the integral component of the speed controller is only held if it reaches the torque limit.

For bit 19, 20:

When this bit is set, speed overshoots when accelerating along the torque limit and for load surges are reduced.

For bit 20:

The acceleration model for the speed setpoint is only active if p1496 is not zero.

For bit 25:

When the bit is set, for high dynamic starting in the I/f mode, the acceleration precontrol torque smoothing only has a short minimum time (4 ms).

p1401[0...n] Flux control configuration / Flux ctrl config

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6491
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 1110 bin

Description: Sets the configuration for flux setpoint control

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	Flux setpoint differentiation active	Yes	No	6723
02	Flux build-up control active	Yes	No	6722, 6723
03	Flux characteristic load-dependent	Yes	No	6725
06	Quick magnetizing	Yes	No	6722
09	Dynamic load-dependent flux boost	Yes	No	6790, 6823
10	Flux boost low speed	Yes	No	-
14	Efficiency optimization 2 active	Yes	No	6722, 6837

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: RESM: reluctance synchronous motor (synchronous reluctance motor)

For bit 01:

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.

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.

For bit 02:

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.

For bit 03:

Synchronous-reluctance motor:

Activation of the load-dependent optimum flux characteristic.

For bit 06:

Magnetizing is performed with maximum current (0.9 * r0067). With active identification of the stator resistance (see p0621) quick magnetizing is internally deactivated and alarm A07416 is displayed. During a flying restart of a rotating motor (see p1200) no quick magnetizing takes place.

For bit 09:

Synchronous reluctance motor (RESM):

Dynamic increase in the flux setpoint when torque is quickly established.

For bit 10:

Synchronous reluctance motor (RESM):

For load-dependent optimum flux characteristic (p1401.3 = 1) the flux setpoint is increased at low speeds.

For bit 14:

When the function is activated, the following applies:

- the optimum flux is calculated and the power loss is entered for optimization purposes

- the efficiency optimization (p1580) is not active.

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.

p1402[0...n] Closed-loop current control and motor model configuration / I_ctrl config

PM230
PM330

Access level: 4	**Calculated:** p0340 = 1,3	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Sets the configuration for the closed-loop control and the motor model.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Current controller adaptation active	Yes	No	-

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: For bit 02:

The current controller adaptation (p0391 ... p0393) is only calculated when the bit is set.

p1402[0...n] Closed-loop current control and motor model configuration / I_ctrl config

PM240

Access level: 4	**Calculated:** p0340 = 1,3	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration for the closed-loop control and the motor model.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Current controller adaptation active	Yes	No	-
10	d-current controller adaptation model-based	Yes	No	-
12	q-current controller adaptation model-based	Yes	No	-
13	Current controller decoupling filter	Yes	No	-

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: For bit 02:

The current controller adaptation (p0391 ... p0393) is only calculated when the bit is set.

For bits 10, 12:

Only for closed-loop controlled reluctance motor: The gain of the d, q current controller is realized adaptively at the saturation model depending on the operating point.

Parameters p1720, p1715 act as scaling factor.

For bit 13: only permanent magnet synchronous motors

For stabilization in the field weakening range.

p1402[0...n] Closed-loop current control and motor model configuration / I_ctrl config

PM250
PM260

Access level: 4	**Calculated:** p0340 = 1,3	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration for the closed-loop control and the motor model.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
02	Current controller adaptation active	Yes	No	-
13	Current controller decoupling filter	Yes	No	-

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: For bit 02:

The current controller adaptation (p0391 ... p0393) is only calculated when the bit is set.

For bit 13: only permanent magnet synchronous motors

For stabilization in the field weakening range.

r1407.0...23 CO/BO: Status word speed controller / ZSW n_ctrl

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2522
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the speed controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	U/f control active	Yes	No	-
01	Encoderless operation active	Yes	No	-
02	Reserved	-	-	-
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	Reserved	-	-	-
11	Speed setpoint limited	Yes	No	6030
12	Ramp-function generator set	Yes	No	-
13	Encoderless operation due to a fault	Yes	No	-
14	I/f control active	Yes	No	-
15	Torque limit reached (without precontrol)	Yes	No	6060
17	Speed limiting control active	Yes	No	6640
23	Acceleration model activated	Yes	No	-

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1408.0...14 CO/BO: Status word current controller / ZSW I_ctrl

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2530
Min	**Max**	**Factory setting**
-	-	-

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 active	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 SESM magnetizing excit. current limited to zero	Yes	No	-

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1416[0...n] Speed setpoint filter 1 time constant / n_set_filt 1 T

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6020, 6030
Min	**Max**	**Factory setting**
0.00 [ms]	5000.00 [ms]	0.00 [ms]

Description: Sets the time constant for the speed setpoint filter 1 (PT1).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1438 CO: Speed controller speed setpoint / n_ctrl n_set

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 3001, 6020, 6031
Min	**Max**	**Factory setting**
- [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: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: In the standard state (the reference model is deactivated), r1438 = r1439.

r1445 CO: Actual speed smoothed / n_act smooth

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 6040
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the actual smoothed speed actual value of the speed control.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1452[0...n] Speed controller speed actual value smoothing time (sensorless) / n_C n_act T_s SL

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6020, 6040
Min	**Max**	**Factory setting**
0.00 [ms]	32000.00 [ms]	10.00 [ms]

Description: Sets the smoothing time for the actual speed of the speed controller for encoderless closed-loop speed control.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: The smoothing must be increased if there is gear backlash. For longer smoothing times, the integral time of the speed controller must also be increased (e.g. using p0340 = 4).

p1461[0...n] Speed controller Kp adaptation speed upper scaling / n_ctr Kp n up scal

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6050
Min	**Max**	**Factory setting**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the P gain of the speed controller for the upper adaptation speed range (> p1465).

The entry is made referred to the P gain for the lower adaptation speed range of the speed controller (% referred to p1470).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1464, p1465

Note: If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition p1464, then the controller gain below p1465 is adapted with p1461. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

p1463[0...n] Speed controller Tn adaptation speed upper scaling / n_ctr Tn n up scal

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6050
Min	**Max**	**Factory setting**
0.0 [%]	200000.0 [%]	100.0 [%]

Description: Sets the integral time of the speed controller after the adaptation speed range (> p1465).

The entry is made referred to the integral time for the lower adaptation speed range of the speed controller (% referred to p1472).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1464, p1465

Note: If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller integral time below p1465 is adapted with p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

p1464[0...n] Speed controller adaptation speed lower / n_ctrl n lower

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 6050
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the lower adaptation speed of the speed controller.

No adaptation is effective below this speed.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1461, p1463, p1465

Note: If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller 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.

p1465[0...n] Speed controller adaptation speed upper / n_ctrl n upper

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 6050
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: 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.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1461, p1463, p1464

Note: If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller below p1465 is adapted with p1461 or p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

r1468 CO: Speed controller P-gain effective / n_ctr Kp eff

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6040
Min	**Max**	**Factory setting**
-	-	-

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.

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1469 Speed controller integral time effective / n_ctr Tn eff

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 5040, 5042, 6040
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the effective integral time of the speed controller.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1470[0...n] Speed controller encoderless operation P-gain / n_ctrl SL Kp

Access level: 2	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6040, 6050
Min	**Max**	**Factory setting**
0.000	999999.000	0.300

Description: Sets the P gain for encoderless operation for the speed controller.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: The product p0341 x p0342 is taken into account when automatically calculating the speed controller (p0340 = 1, 3, 4).

p1472[0...n] Speed controller encoderless operation integral time / n_ctrl SL Tn

Access level: 2	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6040, 6050
Min	**Max**	**Factory setting**
0.0 [ms]	100000.0 [ms]	20.0 [ms]

Description: Set the integral time for encoderless operation for the speed controller.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: The integral component is stopped if the complete controller output or the sum of controller output and torque precontrol reach the torque limit.

r1482 CO: Speed controller I torque output / n_ctrl I-M_outp

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Dyn. index:** -
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 5040, 5042, 5210, 6030, 6040
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

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

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1493 CO: Moment of inertia total, scaled / M_inert tot scal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: 25_1	**Unit selection:** p0100	**Func. diagram:** 6031
Min	**Max**	**Factory setting**
- [kgm²]	- [kgm²]	- [kgm²]

Description: Display and connector output for the parameterized total moment of inertia.

The value is calculated as follows: (p0341 * p0342) + p1496

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1496[0...n] Acceleration precontrol scaling / a_prectrl scal

PM230
PM240
PM250, PM260

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6020, 6031
Min	**Max**	**Factory setting**
0.0 [%]	10000.0 [%]	0.0 [%]

Description: Sets the scaling for the acceleration precontrol of the speed/velocity controller.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0341, p0342

Warning: The acceleration precontrol r1518 is kept at the old value if the ramp-function generator tracking (r1199.5) is active or the ramp-function generator output is set (r1199.3). This is used to avoid torque peaks. Depending on the application, it may therefore be necessary to disable the ramp-function generator tracking (p1145 = 0) or the acceleration precontrol (p1496 = 0).

The acceleration precontrol is set to zero, if the Vdc control is active (r0056.14/15).

Note: The parameter is set to 100% by the rotating measurement (refer to p1960).

The acceleration precontrol 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 precontrol mode is not used if there is gearbox backlash.

p1496[0...n] Acceleration precontrol scaling / a_prectrl scal

PM330

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6020, 6031
Min	**Max**	**Factory setting**
0.0 [%]	10000.0 [%]	100.0 [%]

Description: Sets the scaling for the acceleration precontrol of the speed/velocity controller.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0341, p0342

Warning: The acceleration precontrol r1518 is kept at the old value if the ramp-function generator tracking (r1199.5) is active or the ramp-function generator output is set (r1199.3). This is used to avoid torque peaks. Depending on the application, it may therefore be necessary to disable the ramp-function generator tracking (p1145 = 0) or the acceleration precontrol (p1496 = 0).

The acceleration precontrol is set to zero, if the Vdc control is active (r0056.14/15).

Note: The parameter is set to 100% by the rotating measurement (refer to p1960).

The acceleration precontrol 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 precontrol mode is not used if there is gearbox backlash.

r1508 CO: Torque setpoint before supplementary torque / M_set bef. M_suppl

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Dyn. index:** -
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 6030, 6060, 6722
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the torque setpoint before entering the supplementary torque.

For closed-loop speed control, r1508 corresponds to the speed controller output.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1517[0...n] Accelerating torque smoothing time constant / M_accel T_smooth

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6060
Min	**Max**	**Factory setting**
0.00 [ms]	100.00 [ms]	4.00 [ms]

Description: Sets the smoothing time constant of the accelerating torque.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: The acceleration precontrol is inhibited if the smoothing is set to the maximum value.

r1518[0...1] CO: Accelerating torque / M_accel

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Dyn. index:** -
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 6060
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the accelerating torque for precontrol of the speed controller.

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

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0341, p0342, p1496

p1520[0...n] CO: Torque limit upper / M_max upper

Access level: 2	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2003	**Dyn. index:** DDS, p0180
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 6020, 6630
Min	**Max**	**Factory setting**
-1000000.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the fixed, upper torque limit.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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).

p1521[0...n] CO: Torque limit lower / M_max lower

Access level: 2	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2003	**Dyn. index:** DDS, p0180
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 6020, 6630
Min	**Max**	**Factory setting**
-20000000.00 [Nm]	1000000.00 [Nm]	0.00 [Nm]

Description: Sets the fixed, lower torque limit.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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).

p1522[0...n] CI: Torque limit upper / M_max upper

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2003	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 6630
Min	**Max**	**Factory setting**
-	-	1520[0]

Description: Sets the signal source for the upper torque limit.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1520, p1521, p1523

Danger: Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

p1523[0...n] CI: Torque limit lower / M_max lower

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2003	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 6020, 6630
Min	**Max**	**Factory setting**
-	-	1521[0]

Description: Sets the signal source for the lower torque limit.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1520, p1521, p1522

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/motoring scaling / M_max up/mot scal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 5620, 5630
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the upper torque limit or the torque limit when motoring.

Dependency: p1400.4 = 0: upper/lower

p1400.4 = 1: motoring / regenerating

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6630
Min	**Max**	**Factory setting**
-2000.0 [%]	2000.0 [%]	100.0 [%]

Description: Sets the scaling for the lower torque limit.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Dyn. index:** -
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 6060, 6630, 6640
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the upper torque limit of all torque limits without offset.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1520, p1521, p1522, p1523, p1528, p1529

r1527 CO: Torque limit lower without offset / M_max low w/o offs

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Dyn. index:** -
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 6060, 6630, 6640
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the lower torque limit of all torque limits without offset.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1520, p1521, p1522, p1523, p1528, p1529

p1528[0...n] CI: Torque limit upper scaling / M_max upper scal

Access level: 4	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 6630
Min	**Max**	**Factory setting**
-	-	1524[0]

Description: Sets the signal source for the scaling of the upper torque limit in p1522.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

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

p1529[0...n] CI: Torque limit lower scaling / M_max lower scal

Access level: 4	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 6630
Min	**Max**	**Factory setting**
-	-	1525[0]

Description: Sets the signal source for the scaling of the lower torque limit in p1523.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Danger: For p1400.4 = 0 (torque limiting, upper/lower) the following applies:

Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.

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

p1530[0...n] Power limit motoring / P_max mot

Access level: 2	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 14_5	**Unit selection:** p0505	**Func. diagram:** 6640
Min	**Max**	**Factory setting**
0.00 [kW]	100000.00 [kW]	0.00 [kW]

Description: Sets the power limit when motoring.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0500, p1531

Note: The power limit is limited to 300% of the rated motor power.

p1531[0...n] Power limit regenerative / P_max gen

Access level: 2	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 14_5	**Unit selection:** p0505	**Func. diagram:** 6640
Min	**Max**	**Factory setting**
-100000.00 [kW]	-0.01 [kW]	-0.01 [kW]

Description: Sets the regenerative power limit.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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].

r1533 Current limit torque-generating total / Iq_max total

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 6640
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum torque/force generating current as a result if all current limits.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1536[0...1] Current limit maximum torque-generating current / Isq_max

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 6640, 6710
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the maximum limit for the torque-generating current component.

Index 0 indicates the signal limited by the Vdc controller.

Index: [0] = Limited
[1] = Unlimited

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1537[0...1] Current limit minimum torque-generating current / Isq_min

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 6640, 6710
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Displays the minimum limit for the torque-generating current component.

Index 0 indicates the signal limited by the Vdc controller.

Index: [0] = Limited
[1] = Unlimited

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1538 CO: Upper effective torque limit / M_max upper eff

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Dyn. index:** -
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 6020, 6640
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the actual effective upper torque limit.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: The effective upper torque limit is reduced with respect to the selected upper torque limit p1520, if the current limit p0640 is reduced or the rated magnetizing current of the induction motor p0320 is increased.

This may be the case for rotating measurements (see p1960).

The torque limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

r1539 CO: Lower effective torque limit / M_max lower eff

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Dyn. index:** -
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 6020, 6640
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Display and connector output for the actual effective lower torque limit.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: The effective lower torque limit is reduced with respect to the selected lower torque limit p1521, if the current limit p0640 is reduced or the rated magnetizing current of the induction motor p0320 is increased.

This may be the case for rotating measurements (see p1960).

The torque limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

r1547[0...1] CO: Torque limit for speed controller output / M_max outp n_ctrl

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2003	**Dyn. index:** -
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 6060
Min	**Max**	**Factory setting**
- [Nm]	- [Nm]	- [Nm]

Description: Displays the torque limit to limit the speed controller output.

Index:
[0] = Upper limit
[1] = Lower limit

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1548[0...1] CO: Stall current limit torque-generating maximum / Isq_max stall

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [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

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1552[0...n] CI: Torque limit upper scaling without offset / M_max up w/o offs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 6060
Min	**Max**	**Factory setting**
-	-	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.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1553[0...n] Stall limit scaling / Stall limit scal

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
80.0 [%]	130.0 [%]	100.0 [%]

Description: Sets the scaling of the stall limit for the start of field weakening.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

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.

p1554[0...n] CI: Torque limit lower scaling without offset / M_max low w/o offs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 6060
Min	**Max**	**Factory setting**
-	-	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.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1566[0...n] Flux reduction torque factor transition value / Flux red M trans

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6790
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: The following applies for a synchronous reluctance motor:

Displays the transition value for the start of the evaluation of the optimum flux characteristic.

The value is referred to the rated motor torque.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: The transition value corresponds with the lower limit of the flux setpoint (p1581).

For a lower absolute torque setpoint, the flux setpoint remains at the lower limit (p1581).

p1567[0...n] Magnetization rate time scaling / Mag Tv scale

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6790
Min	**Max**	**Factory setting**
0 [%]	1000 [%]	100 [%]

Description: The following applies for a synchronous reluctance motor:

Sets the scaling of the rate time Tv for dynamic flux increase when the torque is quickly established.

The value is referred to the inverse value of the rated motor frequency.

Tv = p1567 / 100 % / p0310

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p1401

Note: The "Dynamic load-dependent flux boost" function can be deactivated using p1401.9 = 0.

r1568[0...5] CO: Synchronous reluctance motor flux channel / RESM flux channel

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

Description: Display and connector output for signals of the flux channel for a synchronous reluctance motor (RESM).

The values are referred to the rated motor flux of the in-line axis (p0357 * r0331).

Index:
[0] = Setpoint before filter
[1] = Optimum flux characteristic output
[2] = Minimum value at low speed
[3] = Dynamic load-dependent boost
[4] = Field weakening value total
[5] = Field weakening value precontrol

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: RESM: reluctance synchronous motor (synchronous reluctance motor)

p1570[0...n] CO: Flux setpoint / Flex setp

PM230
PM240
PM250, PM260

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6722
Min	**Max**	**Factory setting**
50.0 [%]	200.0 [%]	100.0 [%]

Description: Sets the flux setpoint referred to rated motor flux.

The following applies for a synchronous reluctance motor:

Scaling the flux setpoint.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: For p1570 > 100%, the flux setpoint increases as a function of the load from 100% (no-load operation) to the setting in p1570 (above rated motor torque), if p1580 > 0% has been set.

The following applies for a synchronous reluctance motor:

The scaling allows the flux setpoint to be adapted when operating with load-dependent optimum flux characteristic or with constant flux setpoint.

p1570[0...n] CO: Flux setpoint / Flex setp

PM330

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6722
Min	**Max**	**Factory setting**
50.0 [%]	200.0 [%]	103.0 [%]

Description: Sets the flux setpoint referred to rated motor flux.

The following applies for a synchronous reluctance motor:

Scaling the flux setpoint.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0500

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: For p1570 > 100%, the flux setpoint increases as a function of the load from 100% (no-load operation) to the setting in p1570 (above rated motor torque), if p1580 > 0% has been set.

The following applies for a synchronous reluctance motor:

The scaling allows the flux setpoint to be adapted when operating with load-dependent optimum flux characteristic or with constant flux setpoint.

p1574[0...n] Voltage reserve dynamic / U_reserve dyn

PM230
PM330

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 5_1	**Unit selection:** p0505	**Func. diagram:** 6723, 6724
Min	**Max**	**Factory setting**
0.0 [Vrms]	150.0 [Vrms]	2.0 [Vrms]

Description: Sets a dynamic voltage reserve.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0500

Note: In the field weakening range, it must be expected that the control dynamic performance is somewhat restricted due to the limited possibilities of controlling/adjusting the voltage. This can be improved by increasing the voltage reserve. Increasing the reserve reduces the steady-state maximum output voltage (r0071).

p1574[0...n] Voltage reserve dynamic / U_reserve dyn

PM240
PM250, PM260

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 5_1	**Unit selection:** p0505	**Func. diagram:** 6723, 6724
Min	**Max**	**Factory setting**
0.0 [Vrms]	150.0 [Vrms]	10.0 [Vrms]

Description: Sets a dynamic voltage reserve.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0500

Note: In the field weakening range, it must be expected that the control dynamic performance is somewhat restricted due to the limited possibilities of controlling/adjusting the voltage. This can be improved by increasing the voltage reserve. Increasing the reserve reduces the steady-state maximum output voltage (r0071).

p1575[0...n] Voltage target value limit / U_tgt val lim

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6725
Min	**Max**	**Factory setting**
50.00 [%]	300.00 [%]	200.00 [%]

Description: Sets the limit of the voltage target value.

In steady-state field weakening operation this corresponds to the required output voltage.

The value of 100% refers to p0304.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: The output voltage is only limited if the maximum output voltage (r0071) minus the voltage reserve (p1574) corresponds to a value higher than p1575.

Limiting via p1575 allows the influence of the voltage ripple of the line supply voltage to be eliminated at the operating point.

p1578[0...n] Flux reduction flux decrease time constant / Flux red dec T

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6791
Min	**Max**	**Factory setting**
20 [ms]	5000 [ms]	200 [ms]

Description: The following applies for a synchronous reluctance motor:

Sets the time constant for reducing the flux setpoint for a load-dependent optimum flux characteristic.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1579

Note: To avoid remagnetization processes for load-dependent flux characteristics and for fast load changes, the time constant to reduce the flux setpoint must be set to an appropriately high value.
As a consequence, it is preset with a multiple of the time constant used for the flux build up.

p1579[0...n] Flux reduction flux build-up time constant / Flux red incr T

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6791
Min	**Max**	**Factory setting**
0 [ms]	5000 [ms]	4 [ms]

Description: The following applies for a synchronous reluctance motor:
Sets the time constant for establishing the flux setpoint for a load-dependent optimum flux characteristic.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)
Refer to: p1578

Note: To quickly establish the flux for torque changes, an appropriately short time constant for the flux build-up must be selected.
It is preset with the inverse value of the rated motor frequency (p0310).

p1580[0...n] Efficiency optimization / Efficiency opt.

PM230

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6722
Min	**Max**	**Factory setting**
0 [%]	100 [%]	80 [%]

Description: Sets the efficiency optimization.
When optimizing the efficiency, the flux setpoint of the closed-loop control is adapted as a function of the load.
For p1580 = 100 %, under no-load operating conditions, the flux setpoint is reduced to 50 % of the rated motor flux.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)
Refer to: p0500

Note: It only makes sense to activate this function if the dynamic response requirements of the speed controller are low.
In order to avoid oscillations, if required, the speed controller parameters should be adapted (increase Tn, reduce Kp).
Further, the smoothing time of the flux setpoint filter (p1582) should be increased.

p1580[0...n] Efficiency optimization / Efficiency opt.

PM240
PM250, PM260

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6722
Min	**Max**	**Factory setting**
0 [%]	100 [%]	0 [%]

Description: Sets the efficiency optimization.
When optimizing the efficiency, the flux setpoint of the closed-loop control is adapted as a function of the load.
For p1580 = 100 %, under no-load operating conditions, the flux setpoint is reduced to 50 % of the rated motor flux.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: It only makes sense to activate this function if the dynamic response requirements of the speed controller are low.
In order to avoid oscillations, if required, the speed controller parameters should be adapted (increase Tn, reduce Kp).
Further, the smoothing time of the flux setpoint filter (p1582) should be increased.

p1580[0...n] Efficiency optimization / Efficiency opt.

PM330

	Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6722
	Min	**Max**	**Factory setting**
	0 [%]	100 [%]	100 [%]

Description: Sets the efficiency optimization.

When optimizing the efficiency, the flux setpoint of the closed-loop control is adapted as a function of the load.

For p1580 = 100 %, under no-load operating conditions, the flux setpoint is reduced to 50 % of the rated motor flux.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0500

Note: It only makes sense to activate this function if the dynamic response requirements of the speed controller are low.

In order to avoid oscillations, if required, the speed controller parameters should be adapted (increase Tn, reduce Kp).

Further, the smoothing time of the flux setpoint filter (p1582) should be increased.

p1581[0...n] Flux reduction factor / Flux red factor

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [%]	100 [%]	100 [%]

Description: The following applies for a synchronous reluctance motor:

Sets the lower limit of the flux setpoint to evaluate the optimum flux characteristic.

The value is referred to the rated motor flux (p0357 * r0331).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1582[0...n] Flux setpoint smoothing time / Flux setp T_smth

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6722, 6724
Min	**Max**	**Factory setting**
4 [ms]	5000 [ms]	15 [ms]

Description: Sets the smoothing time for the flux setpoint.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1584[0...n] Field weakening operation flux setpoint smoothing time / Field weak T_smth

Access level: 4	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6722
Min	**Max**	**Factory setting**
0 [ms]	20000 [ms]	0 [ms]

Description: Sets the smoothing time for the flux setpoint in the field-weakening range

Recommendation: 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

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Note: Only the flux setpoint rise is smoothed

p1586[0...n] Field weakening characteristic scaling / Field weak scal

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
80.0 [%]	120.0 [%]	100.0 [%]

Description: Sets the scaling of the precontrol characteristic for the start of field weakening.

For values above 100 % and for partial load situations, the field weakening starts at higher speeds.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

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.

p1590[0...n] Flux controller P gain / Flux controller Kp

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723
Min	**Max**	**Factory setting**
0.0	999999.0	10.0

Description: Sets the proportional gain for the flux controller.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Note: 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.

p1592[0...n] Flux controller integral time / Flux controller Tn

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	30 [ms]

Description: Sets the integral time for the flux controller.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: 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.

r1593[0...1] CO: Field weakening controller / flux controller output / Field/Fl_ctrl outp

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 6724
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: Display and connector output for the output of the field weakening controller (synchronous motor).

Index:
[0] = PI output
[1] = I output

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1595[0...n] Field weakening controller additional setpoint / Field_ctr add_setp

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6726
Min	**Max**	**Factory setting**
-80.00 [%]	50.00 [%]	0.00 [%]

Description: Sets an additional setpoint for the field weakening controller.

The value refers to the dynamic voltage reserve (p1574).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Note: For a value equal to zero, the field weakening controller is activated when the maximum voltage, calculated with the average value of the DC link voltage, is reached.

Negative values cause the field weakening controller to intervene earlier, so that the voltage can move away from the modulation depth limit.

p1596[0...n] Field weakening controller integral-action time / Field_ctrl Tn

PM230
PM240
PM250, PM260

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723, 6724
Min	**Max**	**Factory setting**
10 [ms]	10000 [ms]	300 [ms]

Description: Sets the integral-action time of the field-weakening controller.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1597 CO: Field weakening controller output / Field_ctrl outp

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the output of the field weakening controller.

The value is referred to the rated motor flux.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1598 CO: Total flux setpoint / Flux setp total

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6714, 6723, 6724, 6725, 6726
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the effective flux setpoint.

The value is referred to the rated motor flux.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1601[0...n] Current injection ramp time / I_inject t_ramp

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6790
Min	**Max**	**Factory setting**
1 [ms]	10000 [ms]	20 [ms]

Description: Synchronous-reluctance motor:

Sets the ramp-up time of the current setpoint (p1610, p1611) when switching over from closed-loop controlled to open-loop controlled operation.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1610[0...n] Torque setpoint static (sensorless) / M_set static

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6700, 6721, 6722, 6726
Min	**Max**	**Factory setting**
-200.0 [%]	200.0 [%]	50.0 [%]

Description: Sets the static torque setpoint for sensorless vector control in the low speed range.

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.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Notice: p1610 should always be set to at least 10 % higher than the maximum steady-state load that can occur.

Note: For p1610 = 0%, a current setpoint is calculated that corresponds to the no-load case (ASM: rated magnetizing current, RESM: no-load 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 as well as closed-loop controlled reluctance motors.

p1611[0...n] Additional acceleration torque (sensorless) / M_suppl_accel

Access level: 2	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6700, 6721, 6722, 6726
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	30.0 [%]

Description: 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).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: When accelerating and braking p1611 is added to p1610 and the resulting total torque is converted into an appropriate current setpoint and controlled.

For pure accelerating torques, it is always favorable to use the torque precontrol of the speed controller (p1496).

r1614 EMF maximum / EMF max

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
Unit group: 5_1	**Unit selection:** p0505	**Func. diagram:** 6725
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the actual maximum possible electromotive force (EMF) of the separately excited synchronous motor.

Dependency: 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.

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

p1616[0...n] Current setpoint smoothing time / I_set T_smooth

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6721, 6722
Min	**Max**	**Factory setting**
4 [ms]	10000 [ms]	40 [ms]

Description: Sets the smoothing time for the current setpoint.

The current setpoint is generated from p1610 and p1611.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: This parameter is only effective in the range where current is injected for sensorless vector control.

r1623[0...1] Field-generating current setpoint (steady-state) / Id_set stationary

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 6723
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

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

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: For index 1:

Reserved.

r1624 Field-generating current setpoint total / Id_setp total

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2002	**Dyn. index:** -
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 6640, 6721, 6723, 6727
Min	**Max**	**Factory setting**
- [Arms]	- [Arms]	- [Arms]

Description: 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.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1654[0...n] Curr. setpoint torque-gen. smoothing time field weakening range / Isq_s T_smth FW

Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6710
Min	**Max**	**Factory setting**
0.1 [ms]	50.0 [ms]	4.8 [ms]

Description: Sets the smoothing time constant for the setpoint of the torque-generating current components.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Note: The smoothing time does not become effective until the field-weakening range is reached.

p1703[0...n] Isq current controller precontrol scaling / Isq_ctr_prectrScal

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6714
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	60.0 [%]

Description: Sets the scaling of the dynamic current controller precontrol for the torque/force-generating current component Isq.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1715[0...n] Current controller P gain / I_ctrl Kp

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6714
Min	**Max**	**Factory setting**
0.000	100000.000	0.000

Description: Sets the proportional gain of the current controller.

This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1717[0...n] Current controller integral-action time / I_ctrl Tn

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 5714, 6700, 6714, 7017
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	2.00 [ms]

Description: Sets the integral-action time of the current controller.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1715

p1720[0...n] Current controller d axis p gain / Id_ctrl Kp

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000	100000.000	0.000

Description: Sets the proportional gain of the d-current controller for the lower adaptation current range.

This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1722[0...n] Current controller d axis integral time / I_ctrl d-axis Tn

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	2.00 [ms]

Description: Sets the integral time of the d-current controller.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1730[0...n] Isd controller integral component shutdown threshold / Isd ctrl Tn shutd

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
30 [%]	150 [%]	30 [%]

Description: Sets the speed threshold for deactivating the integral component of the Isd controller.

The d current controller is only effective as P controller for speeds greater than the threshold value. Instead of the integral component, the quadrature arm decoupling is effective.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Warning: For settings above 80%, the d current controller is active up to the field weakening limit. When operated at the voltage limit, this can result in an unstable behavior. In order to avoid this, the dynamic voltage reserve p1574 should be increased.

Note: The parameter value is referred to the synchronous rated motor speed.

p1731[0...n] Isd controller combination current time component / Isd ctr I_combi T1

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [ms]	10000.00 [ms]	0.00 [ms]

Description: Sets the time constant to calculate the d current DC component difference (combination current) to add to the d current controller actual value.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Note: It is not added for p1731 = 0.

r1732[0...1] CO: Direct-axis voltage setpoint / Direct U set

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
Unit group: 5_1	**Unit selection:** p0505	**Func. diagram:** 5700, 5714, 6714, 5718
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the direct axis voltage setpoint Ud.

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

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1733[0...1] CO: Quadrature-axis voltage setpoint / Quad U set

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2001	**Dyn. index:** -
Unit group: 5_1	**Unit selection:** p0505	**Func. diagram:** 6714, 6731
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Display and connector output for the quadrature axis voltage setpoint Uq.

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

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1740[0...n] Gain resonance damping for encoderless closed-loop control / Gain res_damp

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000	10.000	0.025

Description: Defines the gain of the controller for resonance damping for operation with sensorless vector control in the range that current is injected.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1745[0...n] Motor model error threshold stall detection / MotMod ThreshStall

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [%]	1000.0 [%]	5.0 [%]

Description: Sets the fault threshold in order to detect a motor that has stalled.

If the error signal (r1746) exceeds the parameterized error threshold, then status signal r1408.12 is set to 1.

Dependency: If a stalled drive is detected (r1408.12 = 1), fault F07902 is output after the delay time set in p2178.

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p2178

Note: Monitoring is only effective in the low-speed range (below p1755 * (100% - p1756)).

r1746 Motor model error signal stall detection / MotMod sig stall

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Signal to initiate stall detection

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: The signal is not calculated while magnetizing and only in the low speed range (below p1755 * (100 % - p1756)).

p1749[0...n] Motor model increase changeover speed encoderless operation / Incr n_chng no enc

Access level: 4	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [%]	99.0 [%]	50.0 [%]

Description: 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.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1755, p1756

p1750[0...n] Motor model configuration / MotMod config

PM230

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 1100 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 8 = 1: Open-loop speed controlled operation independent of the speed setpoint (except for OFF3) (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 (PMSM) for a blocked motor	Yes	No	-
07	Use rugged changeover limits	Yes	No	-
08	Closed-loop controlled until wait time p1758 has expired	Yes	No	-

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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 deactivate 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 sensorless vector control, bit 2 is pre-assigned depending on p0500.

For 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.

For bit 2 = 0:

Bit 3 is also automatically deactivated.

For bit 6 = 1:

The following applies for sensorless 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.

For bit 7 = 1:

The following applies for sensorless vector control of induction motors:

If the changeover limits are parameterized too low (p1755, p1756), then they are automatically increased to rugged values by the absolute amount p1749 * p1755.

The effective time condition for changing over into open-controlled operation is obtained from the minimum value of p1758 and 0.5 * r0384.

Is recommended that bit 7 is activated for applications that demand a high torque at low frequencies, and at the same time require low speed gradients..

Adequate parameterization of the current setpoint must be ensured (p1610, p1611).

For bit 8 = 1: no influence on the functionality of bits 0, 1, 2

The following applies for sensorless vector control of induction motors:

Changeover into open-loop speed controlled operation is no longer dependent on the speed setpoint (except for OFF3), but instead is essentially dependent on time condition p1758. As a consequence, a drive can be started or reversed in closed-loop speed controlled operation with setpoints from an external control system, if these briefly lie in the open-loop speed control range.

p1750[0...n] Motor model configuration / MotMod config

PM240 PM250, PM260	**Access level:** 3	**Calculated:** p0340 = 1,3,5	**Data type:** Unsigned16
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	0000 0000 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 8 = 1: Open-loop speed controlled operation independent of the speed setpoint (except for OFF3) (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 (PMSM) for a blocked motor	Yes	No	-
07	Use rugged changeover limits	Yes	No	-
08	Closed-loop controlled until wait time p1758 has expired	Yes	No	-

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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 deactivate 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 sensorless vector control, bit 2 is pre-assigned depending on p0500.

For 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.

For bit 2 = 0:

Bit 3 is also automatically deactivated.

For bit 6 = 1:

The following applies for sensorless 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.

For bit 7 = 1:

The following applies for sensorless vector control of induction motors:

If the changeover limits are parameterized too low (p1755, p1756), then they are automatically increased to rugged values by the absolute amount p1749 * p1755.

The effective time condition for changing over into open-controlled operation is obtained from the minimum value of p1758 and 0.5 * r0384.

Is recommended that bit 7 is activated for applications that demand a high torque at low frequencies, and at the same time require low speed gradients..

Adequate parameterization of the current setpoint must be ensured (p1610, p1611).

For bit 8 = 1: no influence on the functionality of bits 0, 1, 2

The following applies for sensorless vector control of induction motors:

Changeover into open-loop speed controlled operation is no longer dependent on the speed setpoint (except for OFF3), but instead is essentially dependent on time condition p1758. As a consequence, a drive can be started or reversed in closed-loop speed controlled operation with setpoints from an external control system, if these briefly lie in the open-loop speed control range.

p1750[0...n] Motor model configuration / MotMod config

PM330

Access level: 4	**Calculated:** p0340 = 1,3,5	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 0000 0100 1100 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 8 = 1: Open-loop speed controlled operation independent of the speed setpoint (except for OFF3) (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 (PMSM) for a blocked motor	Yes	No	-
07	Use rugged changeover limits	Yes	No	-
08	Closed-loop controlled until wait time p1758 has expired	Yes	No	-

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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 deactivate 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 sensorless vector control, bit 2 is pre-assigned depending on p0500.

For 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.

For bit 2 = 0:

Bit 3 is also automatically deactivated.

For bit 6 = 1:

The following applies for sensorless 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.

For bit 7 = 1:

The following applies for sensorless vector control of induction motors:

If the changeover limits are parameterized too low (p1755, p1756), then they are automatically increased to rugged values by the absolute amount p1749 * p1755.

The effective time condition for changing over into open-controlled operation is obtained from the minimum value of p1758 and 0.5 * r0384.

Is recommended that bit 7 is activated for applications that demand a high torque at low frequencies, and at the same time require low speed gradients..

Adequate parameterization of the current setpoint must be ensured (p1610, p1611).

For bit 8 = 1: no influence on the functionality of bits 0, 1, 2

The following applies for sensorless vector control of induction motors:

Changeover into open-loop speed controlled operation is no longer dependent on the speed setpoint (except for OFF3), but instead is essentially dependent on time condition p1758. As a consequence, a drive can be started or reversed in closed-loop speed controlled operation with setpoints from an external control system, if these briefly lie in the open-loop speed control range.

r1751 Motor model status / MotMod status

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

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	-
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	-
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	-

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Note: For bit 17:

Displays the enabled status of the rugged model feedback (p1784).

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.

For 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.

For bit 19:

Displays the currently active stator circuit feedback in current model operation.

For bit 20:

Displays the currently effective increase of the changeover limits by the value p1749 * p1755.

For 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.

p1755[0...n] Motor model changeover speed encoderless operation / MotMod n_chgSnsorl

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	210000.00 [rpm]

Description: Sets the speed to change over the motor model to encoderless operation.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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.

p1756 Motor model changeover speed hysteresis encoderless operation / MotMod n_chgov hys

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 6730, 6731
Min	**Max**	**Factory setting**
0.0 [%]	95.0 [%]	50.0 [%]

Description: Sets the hysteresis for the changeover speed of the motor model for encoderless operation.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

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.

p1758[0...n] Motor model changeover delay time closed/open-loop control / MotMod t cl_op

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
100 [ms]	10000 [ms]	500 [ms]

Description: Sets the minimum time for falling below the changeover speed when changing from closed-loop controlled operation to open-loop controlled operation.

Dependency: 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.

Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1755, p1756

Note: If p1758 is changed, commissioning must be selected in order to validate the value for the blocking monitoring.

p1759[0...n] Motor model changeover delay time open/closed-loop control / MotMod t op_cl

Access level: 4	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [ms]	2000 [ms]	0 [ms]

Description: 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.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1755, p1756

Note: With p1759 = 2000 ms, the delay time becomes ineffective and the model changeover is determined by the output frequency only (changeover for p1755).

p1764[0...n] Motor model without encoder speed adaptation Kp / MotMod woE n_adaKp

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6730
Min	**Max**	**Factory setting**
0.000	100000.000	1000.000

Description: Sets the proportional gain of the controller for speed adaptation without encoder.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1767[0...n] Motor model without encoder speed adaptation Tn / MotMod woE n_adaTn

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6730
Min	**Max**	**Factory setting**
1 [ms]	200 [ms]	4 [ms]

Description: Sets the integral time of the controller for speed adaptation without encoder

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1769[0...n] Motor model changeover delay time closed-loop control / MotMod t cl_ctrl

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	0 [ms]

Description: Sets the wait time for a transition from open-loop controlled to closed-loop controlled operation after twice the lower changeover speed p1755 * (1 - p1756 / 100 %) has been exceeded - and below the upper switchover speed p1755.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1755, p1756

Note: With p1759 = 0 ms and above p1755, the delay time becomes ineffective and the model changeover is determined by the output frequency only (changeover for p1755).

r1770 CO: Motor model speed adaptation proportional component / MotMod n_adapt Kp

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 6730
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the P component of the controller for speed adaptation.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

r1771 CO: Motor model speed adaptation I comp. / MotMod n_adapt Tn

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 6730
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Displays the I component of the controller for speed adaptation.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

p1774[0...n] Motor model offset voltage compensation alpha / MotMod offs comp A

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-5.000 [V]	5.000 [V]	0.000 [V]

Description: Sets the offset voltage in the alpha direction; this compensates the offset voltages of the drive converter/inverter at low speeds. The value is valid for the rated (nominal) pulse frequency of the power unit.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Note: The value is pre-set during the rotating measurement.

p1775[0...n] Motor model offset voltage compensation beta / MotMod offs comp B

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-5.000 [V]	5.000 [V]	0.000 [V]

Description: Sets the offset voltage in the beta direction; this compensates the offset voltages of the drive converter/inverter at low speeds. The value is valid for the rated (nominal) pulse frequency of the power unit.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Note: The value is pre-set during the rotating measurement.

r1776[0...6] Motor model status signals / MotMod status sig

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the internal status signals of the motor model.

Index 0: Changeover ramp between current and voltage models

Index 1: Changeover ramp for model feedback (only for induction motors without encoder)

Index 2: Changeover ramp for zero frequency range (only for induction motors without encoder)

Index:
[0] = Changeover ramp motor model
[1] = Changeover ramp model tracking
[2] = Changeover ramp zero frequency induction motor without encoder
[3...6] = Reserved

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

p1780[0...n] Motor model adaptation configuration / MotMod adapt conf

PM230

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 0000 0001 0100 bin

Description: Sets the configuration for the adaptation circuit of the motor model.

Induction motor (ASM):

Rs, Lh and offset compensation.

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 PMSM kT adaptation	Yes	No	-
04	Select motor model offset adaptation	Yes	No	-
06	Select pole position identification PMSM encoderless	Yes	No	-
07	Select T(valve) with Rs adaptation	Yes	No	-
08	Deselect prelim. meas. of inductance for pole position ident.	Yes	No	-
10	Filter time combination current like current ctrl integral time	Yes	No	-
12	Start PMSM 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 Q flux model linear active	Yes	No	-

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: 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 and Lh adaptation (selected using bit 0 ... bit 1) are correctly accepted when changing over the drive data set, a dedicated motor number must be entered into p0826 for each different motor.

ASM: Induction motor

RESM: synchronous reluctance motor

p1780[0...n] Motor model adaptation configuration / MotMod adapt conf

PM240 PM250, PM260	**Access level:** 4	**Calculated:** p0340 = 1,3,4	**Data type:** Unsigned16
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	0000 0000 0001 0100 bin

Description: Sets the configuration for the adaptation circuit of the motor model.

Induction motor (ASM):

Rs, Lh and offset compensation.

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	-
04	Select motor model offset adaptation	Yes	No	-
07	Select T(valve) with Rs adaptation	Yes	No	-
10	Filter time combination current like current ctrl integral time	Yes	No	-
14	Delay of the precontrol speed to the motor model	Yes	No	-
15	RESM Q flux model linear active	Yes	No	-

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: 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 and Lh adaptation (selected using bit 0 ... bit 1) are correctly accepted when changing over the drive data set, a dedicated motor number must be entered into p0826 for each different motor.

ASM: Induction motor

RESM: synchronous reluctance motor

p1780[0...n] Motor model adaptation configuration / MotMod adapt conf

PM330	**Access level:** 3	**Calculated:** p0340 = 1,3,4	**Data type:** Unsigned16
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	0000 1000 0001 0100 bin

Description: Sets the configuration for the adaptation circuit of the motor model.

Induction motor (ASM):

Rs, Lh and offset compensation.

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	-
04	Select motor model offset adaptation	Yes	No	-
07	Select T(valve) with Rs adaptation	Yes	No	-
10	Filter time combination current like current ctrl integral time	Yes	No	-
11	Fast flying restart with voltage model for induction motor	Yes	No	-

Dependency: In the U/f characteristic operating mode, only bit 7 and bit 11 are relevant.

For active motor model feedback (see p1784), the Lh adaptation is internally deactivated automatically.

Note: 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 and Lh adaptation (selected using bit 0 ... bit 1) are correctly accepted when changing over the drive data set, a dedicated motor number must be entered into p0826 for each different motor.

ASM: Induction motor

RESM: synchronous reluctance motor

p1784[0...n] Motor model feedback scaling / MotMod fdbk scal

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [%]	1000.0 [%]	0.0 [%]

Description: Sets the scaling for model fault feedback.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Note: Feeding back the measured model fault to the model states increases the control stability and makes the motor model rugged against parameter errors.

When feedback is selected (p1784 > 0), Lh adaptation is not effective.

p1785[0...n] Motor model Lh adaptation Kp / MotMod Lh Kp

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000	10.000	0.100

Description: Sets the proportional gain for the Lh adaptation of the motor model for an induction motor (ASM).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

p1786[0...n] Motor model Lh adaptation integral time / MotMod Lh Tn

Access level: 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
10 [ms]	10000 [ms]	100 [ms]

Description: Sets the integral time for the Lh adaptation of the motor model for an induction motor (ASM).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

r1787[0...n] Motor model Lh adaptation corrective value / MotMod Lh corr

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the corrective value for the Lh adaptation of the motor model for an induction motor (ASM).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

Refer to: p0826, p1780

Note: 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.

p1795[0...n] Motor model kT adaptation integral time / MotMod kT Tn

PM230	**Access level:** 4	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6731
	Min	**Max**	**Factory setting**
	10 [ms]	10000 [ms]	100 [ms]

Description: Sets the integral time of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PMSM).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1), "Dynamic Drive Control" (DDC, p0096 = 2)

r1797[0...n] Motor model kT adaptation corrective value / MotMod kT corr

PM230	**Access level:** 4	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6731
	Min	**Max**	**Factory setting**
	- [Nm/A]	- [Nm/A]	- [Nm/A]

Description: Displays the corrective value of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PMSM).

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p0826, p1780

Note: The display of the inactive data sets is only updated when changing over the data set.

p1800[0...n] Pulse frequency setpoint / Pulse freq setp

PM230	**Access level:** 2	**Calculated:** -	**Data type:** FloatingPoint32
PM240	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
PM250, PM260	**Unit group:** -	**Unit selection:** -	**Func. diagram:** 8021
	Min	**Max**	**Factory setting**
	0.500 [kHz]	16.000 [kHz]	4.000 [kHz]

Description: Sets the pulse frequency for the converter.

This parameter is pre-set to the rated converter value when the drive is first commissioned.

Dependency: Minimum pulse frequency: p1800 >= 12 * p1082 * r0313 / 60

Refer to: p0230

Note: 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).

The pulse frequency cannot be changed when the motor data identification is activated.

p1800[0...n] Pulse frequency setpoint / Pulse freq setp

PM330

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 8021
Min	**Max**	**Factory setting**
0.500 [kHz]	4.000 [kHz]	4.000 [kHz]

Description: Sets the drive converter switching frequency.

This parameter is pre-set to twice the rated converter value when the drive is first commissioned.

Dependency: Minimum pulse frequency: p1800 >= 12 * p1082 * r0313 / 60

Refer to: p0230

Note: 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).

The pulse frequency cannot be changed when the motor data identification is activated.

r1801[0...1] CO: Pulse frequency / Pulse frequency

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [kHz]	- [kHz]	- [kHz]

Description: Display and connector output for the actual converter switching frequency.

Index:
[0] = Actual
[1] = Modulator minimum value

Note: The selected pulse frequency (p1800) may be reduced if the drive converter has an overload condition (p0290).

p1802[0...n] Modulator mode / Modulator mode

PM230

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	10	10

Description: Sets the modulator mode.

Value:
0: Automatic changeover SVM/FLB
2: Space vector modulation (SVM)
3: SVM without overcontrol
4: SVM/FLB without overcontrol
10: SVM/FLB with modulation depth reduction

Dependency: If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only space vector modulation without overcontrol can be selected as modulation type (p1802 = 3). This 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

Note: When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 2, 10), the modulation depth must be limited using p1803 (default, p1803 = 98%). The higher the overmodulation, the greater the current ripple and torque ripple. With p1802 = 10, the modulation depth limit is automatically reduced to 100% in the critical output frequency range (over approx. 57 Hz).

When changing p1802[x], the values for all of the other existing indices are also changed.

p1802[0...n] Modulator mode / Modulator mode

PM240

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	10	0

Description: Sets the modulator mode.

Value:
0: Automatic changeover SVM/FLB
2: Space vector modulation (SVM)
3: SVM without overcontrol
4: SVM/FLB without overcontrol
10: SVM/FLB with modulation depth reduction

Dependency: If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only space vector modulation without overcontrol can be selected as modulation type (p1802 = 3). This 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

Note: When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 2, 10), the modulation depth must be limited using p1803 (default, p1803 < 100 %). The higher the overmodulation, the greater the current ripple and torque ripple.

When changing p1802[x], the values for all of the other existing indices are also changed.

p1802[0...n] Modulator mode / Modulator mode

PM250
PM260

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4	4

Description: Sets the modulator mode.

Value:
0: Automatic changeover SVM/FLB
2: Space vector modulation (SVM)
3: SVM without overcontrol
4: SVM/FLB without overcontrol

Dependency: If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only space vector modulation without overcontrol can be selected as modulation type (p1802 = 3). This does not apply to power units PM260.

Refer to: p0230, p0500

Note: When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 2, 10), the modulation depth must be limited using p1803 (default, p1803 < 100 %). The higher the overmodulation, the greater the current ripple and torque ripple.

When changing p1802[x], the values for all of the other existing indices are also changed.

p1802[0...n] Modulator mode / Modulator mode

PM330

Access level: 4	**Calculated:** p0340 = 1,3,5	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	19	9

Description: Sets the modulator mode.

Value:
0: Automatic changeover SVM/FLB
2: Space vector modulation (SVM)
9: Edge modulation
19: Optimized pulse pattern

Dependency: Setting p1802 = 19 (optimized pulse pattern) is only released for chassis/built-in power units and SIMOTICS FD motors up to a maximum speed of p1082 <= 60 x 100 Hz / r0313.

Refer to: p0500

Notice: When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 2), 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.

p1803[0...n] Maximum modulation depth / Modulat depth max

PM230

Access level: 4	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723
Min	**Max**	**Factory setting**
20.0 [%]	120.0 [%]	115.0 [%]

Description: Defines the maximum modulation depth.

Dependency: Refer to: p0500

Note: p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).

p1803[0...n] Maximum modulation depth / Modulat depth max

PM240

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723
Min	**Max**	**Factory setting**
20.0 [%]	150.0 [%]	106.0 [%]

Description: Defines the maximum modulation depth.

Dependency: Refer to: p0500

Note: p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).

p1803[0...n] Maximum modulation depth / Modulat depth max

PM250
PM260

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723
Min	**Max**	**Factory setting**
20.0 [%]	150.0 [%]	106.0 [%]

Description: Defines the maximum modulation depth.

Dependency: Default setting PM260: 103 %.

Refer to: p0500

Note: p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).

p1803[0...n] Maximum modulation depth / Modulat depth max

PM330

Access level: 4	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6723
Min	**Max**	**Factory setting**
20.0 [%]	150.0 [%]	106.0 [%]

Description: Defines the maximum modulation depth.

Dependency: Refer to: p0500

Note: p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).

p1806[0...n] Filter time constant Vdc correction / T_filt Vdc_corr

PM230 PM250, PM260	**Access level:** 4	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0.0 [ms]	10000.0 [ms]	0.0 [ms]

Description: Sets the filter time constant for the DC link voltage.
This time constant is used to calculate the modulation depth.

p1806[0...n] Filter time constant Vdc correction / T_filt Vdc_corr

PM240 PM330	**Access level:** 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0.0 [ms]	10000.0 [ms]	0.0 [ms]

Description: Sets the filter time constant for the DC link voltage.
This time constant is used to calculate the modulation depth.

r1809 CO: Modulator mode actual / Modulator mode act

PM230 PM240 PM250, PM260	**Access level:** 4	**Calculated:** -	**Data type:** Integer16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	1	9	-

Description: Displays the effective modulator mode.

Value:
1: Flat top modulation (FLB)
2: Space vector modulation (SVM)
9: Optimized pulse pattern

r1809 CO: Modulator mode actual / Modulator mode act

PM330	**Access level:** 4	**Calculated:** -	**Data type:** Integer16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	1	9	-

Description: Displays the effective modulator mode.

Value:
1: Flat top modulation (FLB)
2: Space vector modulation (SVM)
3: Edge modulation from 28 Hz; 23:3
4: Edge modulation from 28 Hz; 19:1
5: Edge modulation from 60 Hz; 17:3
6: Edge modulation from 60 Hz; 17:1
7: Edge modulation from 100 Hz; 9:2
8: Edge modulation from 100 Hz; 9:1
9: Optimized pulse pattern

p1810 Modulator configuration / Modulator config

PM230
PM250, PM260

PM230, PM250, PM260	**Access level:** 4	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	0000 bin

Description: Sets the configuration for the modulator.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Avg value filter for V_lim (only for Vdc_comp in modulator)	Yes	No	-
01	DC link voltage compensation in the current control	Yes	No	-

Notice: Bit 1 = 1 can only be set under a pulse inhibit and for r0192.14 = 1.

Note: For bit 00 = 0:

Voltage limitation from the minimum of the DC link voltage (lower ripple in the output current, reduced output voltage).

For 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).

For bit 01 = 0:

DC link voltage compensation in the modulator.

For bit 01 = 1:

DC link voltage compensation in the current control.

p1810 Modulator configuration / Modulator config

PM240	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	0000 bin

Description: Sets the configuration for the modulator.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Avg value filter for V_lim (only for Vdc_comp in modulator)	Yes	No	-
01	DC link voltage compensation in the current control	Yes	No	-

Notice: Bit 1 = 1 can only be set under a pulse inhibit and for r0192.14 = 1.

Note: For bit 00 = 0:

Voltage limitation from the minimum of the DC link voltage (lower ripple in the output current, reduced output voltage).

For 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).

For bit 01 = 0:

DC link voltage compensation in the modulator.

For bit 01 = 1:

DC link voltage compensation in the current control.

p1820[0...n] Reverse the output phase sequence / Outp_ph_seq rev

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(2), T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the phase sequence reversal for the motor without setpoint change.

If the motor does not rotate in the required direction, then the output phase sequence can be reversed using this parameter. This means that the direction of the motor is reversed without the setpoint being changed.

Value:
0: OFF
1: ON

Note: This setting can only be changed when the pulses are inhibited.

p1822 Power unit line phases monitoring tolerance time / PU ph monit t_tol

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
500 [ms]	540000 [ms]	1000 [ms]

Description: 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.

Dependency: Refer to: F30011

Notice: 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.

Note: For the setting p1822 = maximum value, line phase monitoring is deactivated.

p1825 Converter valve threshold voltage / Threshold voltage

Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [Vrms]	100.0 [Vrms]	0.6 [Vrms]

Description: Sets the threshold voltage drop of the valves (power semiconductor devices) to be compensated.

Note: The value is automatically calculated in the motor data identification routine.

p1828 Compensation valve lockout time phase U / Comp t_lock ph U

PM230
PM240
PM250, PM260

Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [µs]	3.99 [µs]	0.00 [µs]

Description: Sets the valve lockout time to compensate for phase U.

Note: The value is automatically calculated in the motor data identification routine.

p1828 Compensation valve lockout time phase U / Comp t_lock ph U

PM330

Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [µs]	7.80 [µs]	0.00 [µs]

Description: Sets the valve lockout time to compensate for phase U.

Note: The value is automatically calculated in the motor data identification routine.

p1829 Compensation valve lockout time phase V / Comp t_lock ph V

PM230
PM240
PM250, PM260

Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [µs]	3.99 [µs]	0.00 [µs]

Description: Sets the valve lockout time to compensate for phase V.

p1829 Compensation valve lockout time phase V / Comp t_lock ph V

PM330

Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [µs]	7.80 [µs]	0.00 [µs]

Description: Sets the valve lockout time to compensate for phase V.

p1830 Compensation valve lockout time phase W / Comp t_lock ph W

PM230
PM240
PM250, PM260

Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [µs]	3.99 [µs]	0.00 [µs]

Description: Sets the valve lockout time to compensate for phase W.

p1830 Compensation valve lockout time phase W / Comp t_lock ph W

PM330

Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [µs]	7.80 [µs]	0.00 [µs]

Description: Sets the valve lockout time to compensate for phase W.

p1832 Dead time compensation current level / t_dead_comp I_lev

Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [Arms]	10000.0 [Arms]	0.0 [Arms]

Description: Sets the current level for the dead time compensation.

Above the current level, the dead time - resulting from the converter switching delays - is compensated by a previously calculated constant value. If the relevant phase current setpoint falls below the absolute value defined by p1832, the corrective value for this phase is continuously reduced.

Dependency: The factory setting of p1832 is automatically set to 0.02 * rated drive converter current (r0207).

r1838.0...15 CO/BO: Gating unit status word 1 / Gating unit ZSW1

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for status word 1 of the power unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Fault time-critical	ON	OFF	-
01	Gating unit mode bit 0	ON	OFF	-
02	Pulse enable	ON	OFF	-
03	Switch-off signal path STO_B	Inactive	Active	-
04	Switch-off signal path STO_A	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	-

p1900 Motor data identification and rotating measurement / MotID and rot meas

PM230
PM250, PM260

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the motor data identification and speed controller optimization.

The motor identification should first be performed with the motor stationary (p1900 = 1, 2; also refer to p1910). Based on this, additional motor and control parameters can be determined using the motor data identification with the motor rotating (p1900 = 1, 3; also refer to p1960; not for p1300 < 20).

p1900 = 0:

Function inhibited.

p1900 = 1:

Sets p1910 = 1 and p1960 = 0, 1 depending on p1300

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next switch-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 switch-on command, a rotating motor data identification routine is carried out - and in addition, a speed controller optimization by making measurements at different motor speeds.

p1900 = 2:

Sets p1910 = 1 and p1960 = 0

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next switch-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution.

p1900 = 3:

Sets p1960 = 0, 1 depending on p1300

This setting should only be selected if the motor data identification was already carried out at standstill.

When the drive enable signals are present, with the next switch-on command, a rotating motor data identification routine is carried out - and in addition, speed controller optimization by taking measurements at different motor speeds.

Value:
0: Inhibited
1: Identifying motor data and optimizing the speed controller
2: Identifying motor data (at standstill)
3: Optimizing the speed controller (in rotating operation)

Dependency: Refer to: p1300, p1910, p1960

Refer to: A07980, A07981, F07983, F07984, F07985, F07986, F07988, F07990, A07991

Notice: p1900 = 3:

This setting should only be selected if the motor data identification was already carried out at standstill.

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).

Note: 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 < 20 (U/f controls).

An appropriate alarm is output when the parameter is set.

The switch-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.

If a reluctance motor has been parameterized, a pole position identification is carried out during the stationary measurement. As a consequence, faults that occur can also be assigned to the pole position identification.

For U/f control (p1300), identification with speed controller optimization does not make sense (e.g. P1900 = 1).

p1900 Motor data identification and rotating measurement / MotID and rot meas

PM240

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	12	0

Description: Sets the motor data identification and speed controller optimization.

The motor identification should first be performed with the motor stationary (p1900 = 1, 2; also refer to p1910). Based on this, additional motor and control parameters can be determined using the motor data identification with the motor rotating (p1900 = 1, 3; also refer to p1960; not for p1300 < 20).

p1900 = 0:

Function inhibited.

p1900 = 1:

Sets p1910 = 1 and p1960 = 0, 1 depending on p1300

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next switch-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 switch-on command, a rotating motor data identification routine is carried out - and in addition, a speed controller optimization by making measurements at different motor speeds.

p1900 = 2:

Sets p1910 = 1 and p1960 = 0

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next switch-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution.

p1900 = 3:

Sets p1960 = 0, 1 depending on p1300

This setting should only be selected if the motor data identification was already carried out at standstill.

When the drive enable signals are present, with the next switch-on command, a rotating motor data identification routine is carried out - and in addition, speed controller optimization by taking measurements at different motor speeds.

p1900 = 11, 12:

The same as p1900 = 1, 2 with the difference, that after the measurement, the system immediately goes into operation. For this purpose, p1909.18 is set = p1959.13 is set = 1 .

Value:
0: Inhibited
1: Identifying motor data and optimizing the speed controller
2: Identifying motor data (at standstill)
3: Optimizing the speed controller (in rotating operation)
11: Motor data ident. and speed controller opt., switch to operation
12: Motor data identification (at standstill), switch to operation

Dependency: Refer to: p1300, p1910, p1960

Refer to: A07980, A07981, F07983, F07984, F07985, F07986, F07988, F07990, A07991

Notice: p1900 = 3:

This setting should only be selected if the motor data identification was already carried out at standstill.

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).

Note: 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 < 20 (U/f controls).

An appropriate alarm is output when the parameter is set.

The switch-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.

If a reluctance motor has been parameterized, a pole position identification is carried out during the stationary measurement. As a consequence, faults that occur can also be assigned to the pole position identification.

For U/f control (p1300), identification with speed controller optimization does not make sense (e.g. P1900 = 1).

p1900 Motor data identification and rotating measurement / MotID and rot meas

PM330

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	12	2

Description: Sets the motor data identification and speed controller optimization.

The motor identification should first be performed with the motor stationary (p1900 = 1, 2; also refer to p1910). Based on this, additional motor and control parameters can be determined using the motor data identification with the motor rotating (p1900 = 1, 3; also refer to p1960).

p1900 = 0:

Function inhibited.

p1900 = 1:

Sets p1910 = 1 and p1960 = 0, 1 depending on p1300

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next switch-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 switch-on command, a rotating motor data identification routine is carried out - and in addition, a speed controller optimization by making measurements at different motor speeds.

p1900 = 2:

Sets p1910 = 1 and p1960 = 0

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next switch-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution.

p1900 = 3:

Sets p1960 = 0, 1 depending on p1300

This setting should only be selected if the motor data identification was already carried out at standstill.

When the drive enable signals are present, with the next switch-on command, a rotating motor data identification routine is carried out - and in addition, speed controller optimization by taking measurements at different motor speeds.

p1900 = 11, 12:

The same as p1900 = 1, 2 with the difference, that after the measurement, the system immediately goes into operation. For this purpose, p1909.18 is set = p1959.13 is set = 1 .

Value:
0: Inhibited
1: Identifying motor data and optimizing the speed controller
2: Identifying motor data (at standstill)
3: Optimizing the speed controller (in rotating operation)
11: Motor data ident. and speed controller opt., switch to operation
12: Motor data identification (at standstill), switch to operation

Dependency: Refer to: p1300, p1910, p1960

Refer to: A07980, A07981, F07983, F07984, F07985, F07986, F07988, F07990, A07991

Notice: p1900 = 3:

This setting should only be selected if the motor data identification was already carried out at standstill.

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).

Note: 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 < 20 (U/f controls).

An appropriate alarm is output when the parameter is set.

The switch-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.

If a reluctance motor has been parameterized, a pole position identification is carried out during the stationary measurement. As a consequence, faults that occur can also be assigned to the pole position identification.

For U/f control (p1300), identification with speed controller optimization does not make sense (e.g. P1900 = 1).

p1901 Test pulse evaluation configuration / Test puls config

PM230	**Access level:** 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
PM240	**Can be changed:** T	**Scaling:** -	**Dyn. index:** -
PM250, PM260	**Unit group:** -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	0000 bin

Description: Sets the configuration for the test pulse evaluation.

Bit 00: Check for conductor-to-conductor short circuit once/always when the pulses are enabled.

Bit 01: Check for ground fault once/always when the pulses are enabled.

Bit 02: Activation of the tests selected using bit 00 and/or bit 01 each time the pulses are enabled

Recommendation: If the ground fault test is incorrectly initiated because the motor is not at a complete standstill, then the pulse cancellation delay time (p1228) should be increased.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Dependency: The ground fault test is only possible when the motor is stationary, and is therefore only realized when flying restart is deactivated (p1200 = 0).

Refer to: p0287

Note: 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.

For bit 02 = 0:

If the test was successful once after POWER ON (see r1902.0), then it is not repeated.

For bit 02 = 1:

The test is not only performed after POWER ON, but also each time the pulses are enabled.

p1901 Test pulse evaluation configuration / Test puls config

PM330	**Access level:** 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	0000 bin

Description: Sets the configuration for the test pulse evaluation.

Bit 00: Check for conductor-to-conductor short circuit once/always when the pulses are enabled.

Bit 01: Check for ground fault once/always when the pulses are enabled.

Bit 02: Activation of the tests selected using bit 00 and/or bit 01 each time the pulses are enabled

Recommendation: If the ground fault test is incorrectly initiated because the motor is not at a complete standstill, then the pulse cancellation delay time (p1228) should be increased.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Dependency: The ground fault test is only possible when the motor is stationary, and is therefore only realized when flying restart is deactivated (p1200 = 0).

Refer to: p0287

Note: 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.

For bit 02 = 0:

If the test was successful once after POWER ON (see r1902.0), then it is not repeated.

For bit 02 = 1:

The test is not only performed after POWER ON, but also each time the pulses are enabled.

For chassis power units, the ground fault is also determined using the summed output current (see p0287).

r1902 Test pulse evaluation status / Test puls ev stat

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

Description: Displays the status of the test pulse evaluation.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Note: If the ground fault test was selected, but not successfully performed, then sufficient current was not be able to be established during the test pulses.

For bit 04:

A test pulse longer than one sampling time has occurred

p1909[0...n] Motor data identification control word / MotID STW

PM230
PM240
PM250, PM260

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** Unsigned32
Can be changed: T | **Scaling:** - | **Dyn. index:** MDS, p0130
Unit group: - | **Unit selection:** - | **Func. diagram:** -

Min	Max	Factory setting
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the configuration for the motor data identification.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	Deactivate vibration detection	Yes	No	-
11	Deactivate pulse measurement Lq Ld	Yes	No	-
12	Deactivate rotor resistance Rr measurement	Yes	No	-
14	Deactivate 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	-
22	Only identify circle	Yes	No	-
23	Deactivate circle identification	Yes	No	-
24	Circle identification with 0 and 90 degrees	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 is 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.

Bit 22 ... 24: only for reluctance motors

Bit 22 = 1:

Only that measurement is carried out that is required for the flying restart of a reluctance motor. The bit is reset after a successful measurement

p1909[0...n] Motor data identification control word / MotID STW

PM330

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** MDS, p0130
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 0000 0000 0000 0000 bin

Description: Sets the configuration for the motor data identification.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	Deactivate vibration detection	Yes	No	-
11	Deactivate pulse measurement Lq Ld	Yes	No	-
12	Deactivate rotor resistance Rr measurement	Yes	No	-
14	Deactivate 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	-

Note: The following applies to permanent-magnet synchronous motors:

Without de-selection in bit 11, in the closed-loop control mode, the direct inductance LD and the quadrature inductance Lq are measured at a low current.

When de-selecting with bit 11 or in the U/f mode, the stator inductance is measured at half the rated motor current.

If the stator is inductance is not measured but is to be estimated, then bit 0 should be set and bit 11 should be de-selected.

For 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.

For bit 21 = 1:

The converter output voltage measurement is calibrated at the start of the motor data identification.

p1910 Motor data identification selection / MotID selection

PM230
PM240
PM250, PM260

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	28	0

Description: Sets the motor data identification routine.

The motor data identification routine is carried out after the next switch-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

Refer to: F07990, A07991

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 switch-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: 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 switch-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.

p1910 Motor data identification selection / MotID selection

PM330

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	28	1

Description: Sets the motor data identification routine.

The motor data identification routine is carried out after the next switch-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

Refer to: F07990, A07991

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 switch-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: 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 switch-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.

r1912[0...2] Identified stator resistance / R_stator ident

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays the identified stator resistance.

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

r1913[0...2] Identified rotor time constant / T_rotor ident

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the identified rotor time constant.

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

r1914[0...2] Identified total leakage inductance / L_total_leak ident

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the identified total leakage inductance.

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

r1915[0...2] Identified nominal stator inductance / L_stator ident

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [mH]	- [mH]	- [mH]

Description: Displays the nominal stator inductance identified.

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

r1925[0...2] Identified threshold voltage / U_threshold ident

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [Vrms]	- [Vrms]	- [Vrms]

Description: Displays the identified IGBT threshold voltage.

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

r1926[0...2] Identified effective valve lockout time / t_lock_valve id

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [µs]	- [µs]	- [µs]

Description: Displays the identified effective valve lockout time.

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

r1927[0...2] Identified rotor resistance / R_rotor ident

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ohm]	- [ohm]	- [ohm]

Description: Displays identified rotor resistance (on separately excited synchronous motors: damping resistance).

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

p1959[0...n] Rotating measurement configuration / Rot meas config

PM230 PM250, PM260	**Access level:** 3	**Calculated:** p0340 = 1	**Data type:** Unsigned16
	Can be changed: T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	0000 0000 0001 1110 bin

Description: Sets the configuration of the rotating measurement.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-
11	Do not change the controller parameters during the measurement	Yes	No	-

Dependency: Refer to: F07988

Note: The following parameters are influenced for the individual optimization steps:

Bit 01: p0320, p0360, p0362 ... p0369

Bit 02: p0341, p0342

Bit 03: p1400.0, p1458, p1459, p1463, p1470, p1472, p1496

Bit 04: Dependent on p1960

p1960 = 1, 3: p1400.0, p1458, p1459, p1470, p1472, p1496

p1959[0...n] Rotating measurement configuration / Rot meas config

PM240	**Access level:** 3	**Calculated:** p0340 = 1	**Data type:** Unsigned16
	Can be changed: T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	0000 0000 0001 1110 bin

Description: Sets the configuration of the rotating measurement.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-
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	-
14	Calculate speed actual value smoothing time	Yes	No	-

Dependency: Refer to: F07988

Note: The following parameters are influenced for the individual optimization steps:

Bit 01: p0320, p0360, p0362 ... p0369

Bit 02: p0341, p0342

Bit 03: p1400.0, p1458, p1459, p1463, p1470, p1472, p1496

Bit 04: Dependent on p1960

p1960 = 1, 3: p1400.0, p1458, p1459, p1470, p1472, p1496

p1959[0...n] Rotating measurement configuration / Rot meas config

PM330

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0001 0000 0001 1110 bin

Description: Sets the configuration of the rotating measurement.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-
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	-
14	Calculate speed actual value smoothing time	Yes	No	-

Dependency: Refer to: F07988

Note: The following parameters are influenced for the individual optimization steps:

Bit 01: p0320, p0360, p0362 ... p0369

Bit 02: p0341, p0342

Bit 03: p1400.0, p1458, p1459, p1463, p1470, p1472, p1496

Bit 04: Dependent on p1960

p1960 = 1, 3: p1400.0, p1458, p1459, p1470, p1472, p1496

For bit 12 = 1:

The selection only has an effect on the measurement p1960 = 1. For the shortened measurement, the magnetizing current and moment of inertia are determined with a somewhat lower accuracy.

p1960 Rotating measurement selection / Rot meas sel

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	3	0

Description: Sets the rotating measurement.

The rotating measurement is carried out after the next switch-on command.

The setting possibilities of the parameter depend on the open-loop/closed-loop control mode (p1300).

p1300 < 20 (U/f open-loop control):

It is not possible to select rotating measurement or speed controller optimization.

p1300 = 20, 22 (encoderless operation):

Only rotating measurement or speed controller optimization can be selected in the encoderless mode.

Value:
0: Inhibited
1: Rotating measurement in encoderless operation
3: Speed controller optimization in encoderless operation

Dependency: Before the rotating measurement is carried out, the motor data identification routine (p1900, p1910, r3925) should have already been done.

When selecting the rotating measurement, the drive data set changeover is suppressed.

Refer to: p1300, p1900, p1959, p1967, r1968

Danger: For drives with a mechanical system that limits the distance moved, it must be ensured that this is not reached during the rotating measurement. If this is not the case, then it is not permissible that the measurement is carried out.

Notice: 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).

Note: When the rotating measurement is activated, it is not possible to save the parameters (p0971).

Parameter changes are automatically made for the rotating measurement (e.g. p1120); this is the reason that up to the end of the measurement, and if no faults are present, no manual changes should be made.

The ramp-up and ramp-down times (p1120, p1121) are limited, for the rotating measurement, to 900 s.

p1961 Saturation characteristic speed to determine / Sat_char n determ

PM230	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
PM240	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** -
PM250, PM260	**Unit group:** -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	26 [%]	75 [%]	40 [%]

Description: Sets the speed to determine the saturation characteristic.

The percentage value is referred to p0310 (rated motor frequency).

Dependency: Refer to: p0310, p1959

Refer to: F07983

Note: The saturation characteristics should be determined at an operating point with the lowest possible load.

p1961 Saturation characteristic speed to determine / Sat_char n determ

PM330	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	26 [%]	75 [%]	30 [%]

Description: Sets the speed to determine the saturation characteristic.

The percentage value is referred to p0310 (rated motor frequency).

Dependency: Refer to: p0310, p1959

Refer to: F07983

Note: The saturation characteristics should be determined at an operating point with the lowest possible load.

p1965 Speed_ctrl_opt speed / n_opt speed

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
10 [%]	75 [%]	40 [%]

Description: Sets the speed for the identification of the moment of inertia and the vibration test.

Induction motor:

The percentage value is referred to p0310 (rated motor frequency).

Synchronous motor:

The percentage value is referred to the minimum from p0310 (rated motor frequency) and p1082 (maximum speed).

Dependency: Refer to: p0310, p1959

Refer to: F07984, F07985

Note: In order to calculate the inertia, sudden speed changes are carried out - the specified value corresponds to the lower speed setpoint. This value is increased by 20 % for the upper speed value.

The q leakage inductance (refer to p1959.5) is determined at zero speed and at 50 % of p1965 - however, with a maximum output frequency of 15 Hz and at a minimum of 10% of the rated motor speed.

p1967 Speed_ctrl_opt dynamic factor / n_opt dyn_factor

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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

Refer to: F07985

Note: For a rotating measurement, this parameter can be used to optimize the speed controller.

p1967 = 100 % --> speed controller optimization according to a symmetric optimum.

p1967 > 100 % --> optimization with a higher dynamic response (Kp higher, Tn lower).

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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the dynamic factor which is actually achieved for the vibration test

Dependency: Refer to: p1959, p1967

Refer to: F07985

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

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: 25_1	**Unit selection:** p0100	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [kgm²]	- [kgm²]	- [kgm²]

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^2

NEMA drives (p0100 = 1): unit lb ft^2

Refer to: p0341, p0342, p1959

Refer to: F07984

r1970[0...1] Speed_ctrl_opt vibration test vibration frequency determined / n_opt f_vib det

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [Hz]	- [Hz]	- [Hz]

Description: Displays the vibration frequencies determined by the vibration test.

Index: [0] = Frequency low
[1] = Frequency high

Dependency: Refer to: p1959

Refer to: F07985

p1974	**Speed_ctrl_opt saturation characteristic rotor flux maximum / n_opt rot_fl max**		
	Access level: 4	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	104 [%]	120 [%]	120 [%]

Description: Sets the maximum flux setpoint to measure the saturation characteristic.

p1980[0...n]	**PolID technique / PolID technique**		
PM230	**Access level:** 3	**Calculated:** p0340 = 1,3	**Data type:** Integer16
PM240	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** MDS, p0130
PM250, PM260	**Unit group:** -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	1	10	4

Description: 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.

Value:
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

Dependency: Refer to: p1780

Refer to: F07969

Note: Voltage pulse technique (p1980 = 1, 4, 8) cannot be applied for operation with sine-wave output filters (p0230).

r1992.0...15	**CO/BO: PolID diagnostics / PolID diag**		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display and BICO output for the diagnostics information of the pole position identification (polID)

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Critical encoder fault occurred	Yes	No	-
02	Encoder parking active	Yes	No	-
05	Encoder fault Class 1	Yes	No	-
06	Encoder fault Class 2	Yes	No	-
07	Pole position identification for encoder carried out	Yes	No	-
08	Fine synchronization carried out	Yes	No	-
09	Coarse synchronization carried out	Yes	No	-
10	Commutation information available	Yes	No	-
11	Speed information available	Yes	No	-
12	Position information available	Yes	No	-
15	Zero mark passed	Yes	No	-

Dependency: Refer to: p0325, p0329, p1980

Note: The data of p1992 are updated in a 4 ms cycle.

Fast changes of the encoder status word bits can be better investigated using p7830 and following.

PolID: Pole position identification

p1998[0...n] PolID circle center point / PolID circc center

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0000 [A]	10000.0000 [A]	0.0000 [A]

Description: Current offset determined to measure the speed (RESM)

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1980, r1992

p2000 Reference speed reference frequency / n_ref f_ref

Access level: 2	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
6.00 [rpm]	210000.00 [rpm]	1500.00 [rpm]

Description: Sets the reference quantity for speed and frequency.

All speeds or frequencies specified as relative value are referred to this reference quantity.

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

The following applies: Reference frequency (in Hz) = reference speed (in ((rpm) / 60) x pole pair number)

Dependency: This parameter is only updated during the automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.

Refer to: p2001, p2002, p2003, r2004, r3996

Notice: When the reference speed / reference frequency is changed, short-term communication interruptions may occur.

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

Example 1:

The signal of an analog input (e.g. r0755[0]) is connected to a speed setpoint (e.g. p1070[0]). The actual percentage input value is cyclically converted into the absolute speed setpoint using the reference speed (p2000).

Example 2:

The setpoint from PROFIBUS (r2050[1]) is connected to a speed setpoint (e.g. p1070[0]). The actual input value is cyclically converted into a percentage value via the pre-specified scaling 4000 hex. This percentage value is converted to the absolute speed setpoint via reference speed (p2000).

p2001 Reference voltage / Reference voltage

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
10 [Vrms]	100000 [Vrms]	1000 [Vrms]

Description: Sets the reference quantity for voltages.

All voltages specified as relative value are referred to this reference quantity. This also applies for direct voltage values (= rms value) like the DC link voltage.

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

Note:

This reference quantity also applies to direct voltage values. It is not interpreted as rms value, but as DC voltage value.

Dependency: p2001 is only updated during automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning has been carried out first for drive data set zero and as a result overwriting of the parameter has not been blocked by setting p0573 = 1.

Refer to: r3996

p2002 Reference current / I_ref

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.10 [Arms]	100000.00 [Arms]	100.00 [Arms]

Description: Sets the reference quantity for currents.

All currents specified as relative value are referred to this reference quantity.

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

Dependency: This parameter is only updated during the automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.

Refer to: r3996

Notice: If various DDS are used with different motor data, then the reference quantities remain the same as these are not changed over with the DDS. The resulting conversion factor must be taken into account.

Example:

p2002 = 100 A

Reference quantity 100 A corresponds to 100 %

p0305[0] = 100 A

Rated motor current 100 A for MDS0 in DDS0 --> 100 % corresponds to 100 % of the rated motor current

p0305[1] = 50 A

Rated motor current 50 A for MDS1 in DDS1 --> 100 % corresponds to 200 % of the rated motor current

When the reference current is changed, short-term communication interruptions may occur.

Note: Pre-assigned 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.

Example:

The actual value of a phase current (r0069[0]) is connected to a test socket (e.g. p0771[0]). The actual current value is cyclically converted into a percentage of the reference current (p2002) and output according to the parameterized scaling.

p2003 Reference torque / M_ref

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: 7_2	**Unit selection:** p0505	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.01 [Nm]	20000000.00 [Nm]	1.00 [Nm]

Description: Sets the reference quantity for torque.

All torques specified as relative value are referred to this reference quantity.

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

Dependency: This parameter is only updated during the automatic calculation (p0340 = 1, p3900 > 0) if motor commissioning was carried out beforehand for drive data set zero. This means that the parameter is not locked against overwriting using p0573 = 1.

Refer to: r3996

Notice: When the reference torque is changed, short-term communication interruptions may occur.

Note: 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.

r2004 Reference power / P_ref

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: 14_10	**Unit selection:** p0505	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [kW]	- [kW]	- [kW]

Description: Displays the reference quantity for power.

All power ratings specified as relative value are referred to this reference quantity.

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

Dependency: This value is calculated as follows:

Infeed: Calculated from voltage times current.

Closed-loop control: Calculated from torque times speed.

Refer to: p2000, p2001, p2002, p2003

Note: If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

The reference power is calculated as follows:

- 2 * Pi * reference speed / 60 * reference torque (motor)
- reference voltage * reference current * root(3) (infeed)

p2006 Reference temperature / Ref temp

Access level: 3	**Calculated:** p0340 = 1	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** -
Min	**Max**	**Factory setting**
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).

p2010 Comm IF baud rate / Comm baud

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

p2011 Comm IF address / Comm add

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	31	2

Description: Sets the address for the commissioning interface (USS, RS232).

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

p2016[0...3] CI: Comm IF USS PZD send word / Comm USS send word

Access level: 3	**Calculated:** -	**Data type:** U32 / Integer16
Can be changed: U, T	**Scaling:** 4000H	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) to be sent via the commissioning interface USS.

The actual values are displayed on an intelligent operator panel (IOP).

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

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

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

Description: Displays the receive errors at the commissioning interface (USS, RS232).

Index:
[0] = Number of error-free telegrams
[1] = Number of rejected telegrams
[2] = Number of framing errors
[3] = Number of overrun errors
[4] = Number of parity errors
[5] = Number of starting character errors
[6] = Number of checksum errors
[7] = Number of length errors

p2020 Field bus interface baud rate / Field bus baud

CU230P-2_HVAC
CU230P-2_BT

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
Min	**Max**	**Factory setting**
4	13	8

Description: Sets the baud rate for the field bus interface (RS485).

Value:
4: 2400 baud
5: 4800 baud
6: 9600 baud
7: 19200 baud
8: 38400 baud
9: 57600 baud
10: 76800 baud
11: 93750 baud
12: 115200 baud
13: 187500 baud

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
For p2030 = 2 (Modbus RTU), the following applies:
Min./max./factory setting: 5/13/7
For p2030 = 5 (BACnet MS/TP) the following applies:
Possible values/factory setting: (6, 7, 8, 10) / 8
If p2030 = 8 (P1), the following applies:
Min./max./factory setting: 5/7/5

p2021 Field bus interface address / Field bus address

CU230P-2_HVAC	**Access level:** 2	**Calculated:** -	**Data type:** Unsigned16
CU230P-2_BT	**Can be changed:** T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
	Min	**Max**	**Factory setting**
	0	255	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

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
If p2030 = 5 (BACnet), the following applies:
Min./max./factory setting: 0/127/1
If p2030 = 8 (P1), the following applies:
Min./max./factory setting: 1/99/99

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

CU230P-2_HVAC	**Access level:** 2	**Calculated:** -	**Data type:** Unsigned16
CU230P-2_BT	**Can be changed:** T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
	Min	**Max**	**Factory setting**
	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.

p2023 Field bus interface USS PKW count / Field bus USS PKW

CU230P-2_HVAC	**Access level:** 2	**Calculated:** -	**Data type:** Integer16
CU230P-2_BT	**Can be changed:** T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
	Min	**Max**	**Factory setting**
	0	127	127

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

Value:
0: PKW 0 words
3: PKW 3 words
4: PKW 4 words
127: PKW variable

Dependency: Refer to: p2030

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

p2024[0...2] Fieldbus interface times / Fieldbus times

CU230P-2_HVAC	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU230P-2_BT	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
	Min	**Max**	**Factory setting**
	0 [ms]	10000 [ms]	[0] 6000 [ms] [1] 0 [ms] [2] 0 [ms]

Description: Sets the time values for the fieldbus interface.

For Modbus the following applies:

p2024[0, 1]: Not relevant.

p2024[2]: Telegram pause time (pause time between two telegrams).

The following applies for BACnet:

p2024[0]: APDU timeout.

p2024[1, 2]: Not relevant.

Index:
[0] = Max. processing time
[1] = Character delay time
[2] = Telegram pause time

Dependency: Refer to: p2020, p2030

Note: For 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).

p2025[0...4] Fieldbus interface BACnet settings / BACnet setting

CU230P-2_HVAC	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
CU230P-2_BT	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
	Min	**Max**	**Factory setting**
	0	4194303	[0] 1 [1] 5 [2] 3 [3] 32 [4] 0

Description: Sets the parameter for communication via BACnet.

p2025[0]:

Device object instance number (0 ... 4194303).

p2025[1]:

Maximum number of info frames (1 ... 10).

p2025[2]:
Number of APDU retries (0 ... 39).
p2025[3]:
Maximum master address (1 ... 127).

Index: [0] = Device object instance number
[1] = Maximum number of info frames
[2] = Number of APDU retries
[3] = Maximum master address
[4] = Reserved

Dependency: Refer to: p2030

p2026[0...74] Fieldbus interface BACnet COV increment / BACnet COV incr

CU230P-2_HVAC
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
Min	**Max**	**Factory setting**
0	4194303	1

Description: Sets BACnet COV (change of value) increment values.

Index: [0] = Analog input 0
[1] = Analog input 1
[2] = Analog input 2
[3] = Analog input 3
[4] = Analog input 4
[5] = Analog input 5
[6] = Analog input 6
[7] = Analog input 7
[8] = Analog Output 0

Dependency: Refer to: p2030

p2027 Fieldbus interface BACnet language selection / BACnet language

CU230P-2_HVAC
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the language for the BACnet object properties.

Value: 0: German
1: English

Note: Changes only become effective after POWER ON.

r2029[0...7] Field bus interface error statistics / Field bus error

CU230P-2_HVAC
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the receive errors on the field bus interface (RS485).

Index: [0] = Number of error-free telegrams
[1] = Number of rejected telegrams
[2] = Number of framing errors
[3] = Number of overrun errors
[4] = Number of parity errors
[5] = Number of starting character errors
[6] = Number of checksum errors
[7] = Number of length errors

p2030 Field bus interface protocol selection / Field bus protocol

CU230P-2_CAN

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
Min	**Max**	**Factory setting**
0	4	4

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

Value:
0: No protocol
4: CAN

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

p2030 Field bus interface protocol selection / Field bus protocol

CU230P-2_DP

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
Min	**Max**	**Factory setting**
0	3	3

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

Value:
0: No protocol
3: PROFIBUS

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

p2030 Field bus interface protocol selection / Field bus protocol

CU230P-2_HVAC
CU230P-2_BT

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
Min	**Max**	**Factory setting**
0	8	0

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

Value:
0: No protocol
1: USS
2: Modbus RTU
5: BACnet MS/TP
8: P1

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

p2030 Field bus interface protocol selection / Field bus protocol

CU230P-2_PN

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
Min	**Max**	**Factory setting**
0	10	7

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

Value:
0: No protocol
7: PROFINET
10: EtherNet/IP

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

p2031 Fieldbus interface MODBUS parity / Modbus parity

CU230P-2_HVAC
CU230P-2_BT

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
Min	**Max**	**Factory setting**
0	2	2

Description: Sets the parity for the Modbus protocol (p2030 = 2).

Value:
0: No parity
1: Odd parity
2: Even parity

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 (p2030 = 2).

r2032 Master control control word effective / PcCtrl STW eff

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the effective control word 1 (STW1) of the drive for the master control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	OC / OFF2	Yes	No	-
02	OC / OFF3	Yes	No	-
03	Enable operation	Yes	No	-
04	Enable ramp-function generator	Yes	No	-
05	Start ramp-function generator	Yes	No	-
06	Enable speed setpoint	Yes	No	-
07	Acknowledge fault	Yes	No	-
08	Jog bit 0	Yes	No	3030
09	Jog bit 1	Yes	No	3030
10	Master control by PLC	Yes	No	-

Notice: The master control only influences control word 1 and speed setpoint 1. Other control word/setpoints can be transferred from another automation device.

Note: OC: Operating condition

p2037 PROFIdrive STW1.10 = 0 mode / PD STW1.10=0

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the processing mode for PROFIdrive STW1.10 "master control by PLC".

Generally, control world 1 is received with the first receive word (PZD1) (this is in conformance to the PROFIdrive profile). The behavior of STW1.10 = 0 corresponds to that of the PROFIdrive profile. For other applications that deviate from this, the behavior can be adapted using this particular parameter.

Value:
0: Freeze setpoints and continue to process sign-of-life
1: Freeze setpoints and sign-of-life
2: Do not freeze setpoints

Recommendation: 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

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

p2039 Select debug monitor interface / Debug monit select

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	3	0

Description: The serial interface for the debug monitor is COM1 (commissioning interface, RS232) or COM2 (fieldbus interface, RS485).

Value = 0: Deactivated

Value = 1: COM1, commissioning protocol is deactivated

Value = 2: COM2, field bus is deactivated

Value = 3: Reserved

Note: Value = 2 is only possible for Control Units with RS485 as a field bus interface.

p2040 Fieldbus interface monitoring time / Fieldbus t_monit

CU230P-2_HVAC
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
Min	**Max**	**Factory setting**
0 [ms]	1999999 [ms]	1000 [ms]

Description: 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.

Dependency: Refer to: F01910

Note: p2040 = 0:

Monitoring is deactivated.

For p2030 = 2 (Modbus RTU) or p2030 = 5 (BACnet MS/TP) the following deviation applies:

Factory setting: 10000

p2042 PROFIBUS Ident Number / PB ident No.

CU230P-2_DP	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	1	0

Description: Sets the PROFIBUS ident number (PNO-ID).

SINAMICS can be operated with various identities on PROFIBUS. This allows the use of a PROFIBUS GSD that is independent of the device (e.g. PROFIdrive VIK-NAMUR with ident number 3AA0 hex).

Value:
0: SINAMICS
1: VIK-NAMUR

Note: Every change only becomes effective after a POWER ON.

r2043.0...2 BO: PROFIdrive PZD state / PD PZD state

CU230P-2_DP	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned8
CU230P-2_PN	**Can be changed:** -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2410
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the PROFIdrive PZD state.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Setpoint failure	Yes	No	-
02	Fieldbus operation	Yes	No	-

Dependency: Refer to: p2044

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

p2044 PROFIdrive fault delay / PD fault delay

CU230P-2_DP	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
CU230P-2_PN	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2410
	Min	**Max**	**Factory setting**
	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 is is possible to respond to the failure while the drive is still operational (e.g. emergency retraction).

Dependency: Refer to: r2043

Refer to: F01910

p2047 PROFIBUS additional monitoring time / PB suppl t_monit

CU230P-2_DP	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2410
	Min	**Max**	**Factory setting**
	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.

Dependency: Refer to: F01910

Note: For controller STOP, the additional monitoring time is not effective.

r2050[0...11] CO: PROFIdrive PZD receive word / PZD recv word

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** 4000H	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2440, 2468, 9360
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect PZD (setpoints) with word format received from the fieldbus controller.

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

p2051[0...16] CI: PROFIdrive PZD send word / PZD send word

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** U32 / Integer16
Can be changed: U, T	**Scaling:** 4000H	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2450, 2470, 9370
Min	**Max**	**Factory setting**
-	-	[0] 2089[0] [1] 63[0] [2...16] 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
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17

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

p2051[0...16] CI: PROFIdrive PZD send word / PZD send word

CU230P-2_HVAC	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Integer16
CU230P-2_CAN	**Can be changed:** U, T	**Scaling:** 4000H	**Dyn. index:** -
CU230P-2_BT	**Unit group:** -	**Unit selection:** -	**Func. diagram:** 2450, 2470, 9370
	Min	**Max**	**Factory setting**
	-	-	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
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17

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

r2053[0...16] PROFIdrive diagnostics send PZD word / Diag send word

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2450, 2470, 9370
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD (actual values) with word format sent to the fieldbus controller.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17

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	-

r2054 PROFIBUS status / PB status

CU230P-2_DP

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2410
Min	**Max**	**Factory setting**
0	4	-

Description: Status display for the PROFIBUS interface.

Value:
0: OFF
1: No connection (search for baud rate)
2: Connection OK (baud rate found)
3: Cyclic connection with master (data exchange)
4: Cyclic data OK

r2055[0...2] PROFIBUS diagnostics standard / PB diag standard

CU230P-2_DP

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2410
Min	**Max**	**Factory setting**
-	-	-

Description: Diagnostics display for the PROFIBUS interface.

Index:
[0] = Master bus address
[1] = Master input total length bytes
[2] = Master output total length bytes

r2057 Fieldbus address switch diagnostics / Addr_switch diag

CU230P-2_HVAC
CU230P-2_DP
CU230P-2_CAN
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2410
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the setting of the "BUS ADDRESS" address switch on the Control Unit.

Dependency: Refer to: p0918, p2021, p8620

Notice: The display is updated after switching on, and not cyclically.

r2060[0...10] CO: PROFIdrive PZD receive double word / PZD recv DW

Access level: 3	**Calculated:** -	**Data type:** Integer32
Can be changed: -	**Scaling:** 4000H	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2440, 2468
Min	**Max**	**Factory setting**
-	-	-

Description: Connector output to interconnect PZD (setpoints) with double word format received from the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9

[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12

Dependency: Refer to: r2050

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

p2061[0...15] CI: PROFIdrive PZD send double word / PZD send DW

Access level: 3	**Calculated:** -	**Data type:** U32 / Integer32
Can be changed: U, T	**Scaling:** 4000H	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2470
Min	**Max**	**Factory setting**
-	-	0

Description: Selects the PZD (actual values) with double word format to be sent to the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17

Dependency: Refer to: p2051

Notice: A BICO interconnection for a single PZD can only take place either on p2051 or p2061.

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

r2063[0...15] PROFIdrive diagnostics PZD send double word / Diag send DW

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2470
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PZD (actual values) with double word format sent to the fieldbus controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11] = PZD 12 + 13
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Display for the maximum interconnected PZD in the receive/send direction

Index 0: receive (r2050, r2060)

Index 1: send (p2051, p2061)

r2074[0...11] PROFIdrive diagnostics bus address PZD receive / Diag addr recv

CU230P-2_DP

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PROFIBUS address of the sender from which the process data (PZD) is received.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9

[9] = PZD 10
[10] = PZD 11
[11] = PZD 12

Note: Value range:

0 - 125: Bus address of the sender

65535: Not assigned

r2075[0...11] PROFIdrive diagnostics telegram offset PZD receive / Diag offs recv

CU230P-2_DP	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2410
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[4] = PZD 5
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[11] = PZD 12

Note: Value range:

0 - 242: Byte offset

65535: Not assigned

r2076[0...16] PROFIdrive diagnostics telegram offset PZD send / Diag offs send

CU230P-2_DP	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2410
	Min	**Max**	**Factory setting**
	-	-	-

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
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17

Note: Value range:

0 - 242: Byte offset

65535: Not assigned

r2077[0...15] PROFIBUS diagnostics peer-to-peer data transfer addresses / PB diag peer addr

CU230P-2_DP

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

Description: Displays the addresses of the slaves (peers) where peer-to-peer data transfer has been configured via PROFIBUS.

p2079 PROFIdrive PZD telegram selection extended / PZD telegr ext

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
1	999	1

Description: Sets the send and receive telegram.

Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

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

CU230P-2_DP	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU230P-2_PN	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2472
	Min	**Max**	**Factory setting**
	-	-	[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] 0 [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.

p2080[0...15] BI: Binector-connector converter status word 1 / Bin/con ZSW1

CU230P-2_HVAC	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
CU230P-2_CAN	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** -
CU230P-2_BT	**Unit group:** -	**Unit selection:** -	**Func. diagram:** 2472
	Min	**Max**	**Factory setting**
	-	-	0

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.

p2081[0...15] BI: Binector-connector converter status word 2 / Bin/con ZSW2

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2472
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.

The individual bits are combined to form status word 2.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[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.

p2082[0...15] BI: Binector-connector converter status word 3 / Bin/con ZSW3

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2472
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.

The individual bits are combined to form free status word 3.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[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.

p2083[0...15] BI: Binector-connector converter status word 4 / Bin/con ZSW4

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2472
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.
The individual bits are combined to form free status word 4.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

p2084[0...15] BI: Binector-connector converter status word 5 / Bin/con ZSW5

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2472
Min	**Max**	**Factory setting**
-	-	0

Description: Selects bits to be sent to the PROFIdrive controller.
The individual bits are combined to form free status word 5.

Index:
[0] = Bit 0
[1] = Bit 1
[2] = Bit 2
[3] = Bit 3
[4] = Bit 4
[5] = Bit 5
[6] = Bit 6
[7] = Bit 7
[8] = Bit 8
[9] = Bit 9
[10] = Bit 10
[11] = Bit 11
[12] = Bit 12
[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency: Refer to: p2088, r2089

p2088[0...4] Invert binector-connector converter status word / Bin/con ZSW inv

CU230P-2_DP
CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2472
Min	**Max**	**Factory setting**
-	-	[0] 1010 1000 0000 0000 bin [1...4] 0000 0000 0000 0000 bin

Description: Setting to invert the individual binector inputs of the binector-connector converter.

Index:
[0] = Status word 1
[1] = Status word 2
[2] = Free status word 3
[3] = Free status word 4
[4] = Free status word 5

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	Inverted	Not inverted	-
01	Bit 1	Inverted	Not inverted	-
02	Bit 2	Inverted	Not inverted	-
03	Bit 3	Inverted	Not inverted	-
04	Bit 4	Inverted	Not inverted	-
05	Bit 5	Inverted	Not inverted	-
06	Bit 6	Inverted	Not inverted	-
07	Bit 7	Inverted	Not inverted	-
08	Bit 8	Inverted	Not inverted	-
09	Bit 9	Inverted	Not inverted	-
10	Bit 10	Inverted	Not inverted	-
11	Bit 11	Inverted	Not inverted	-
12	Bit 12	Inverted	Not inverted	-
13	Bit 13	Inverted	Not inverted	-
14	Bit 14	Inverted	Not inverted	-
15	Bit 15	Inverted	Not inverted	-

Dependency: Refer to: p2080, p2081, p2082, p2083, r2089

p2088[0...4] Invert binector-connector converter status word / Bin/con ZSW inv

CU230P-2_HVAC
CU230P-2_CAN
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2472
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the individual binector inputs of the binector-connector converter.

Index:
[0] = Status word 1
[1] = Status word 2
[2] = Free status word 3
[3] = Free status word 4
[4] = Free status word 5

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	Inverted	Not inverted	-
01	Bit 1	Inverted	Not inverted	-
02	Bit 2	Inverted	Not inverted	-
03	Bit 3	Inverted	Not inverted	-
04	Bit 4	Inverted	Not inverted	-
05	Bit 5	Inverted	Not inverted	-
06	Bit 6	Inverted	Not inverted	-
07	Bit 7	Inverted	Not inverted	-
08	Bit 8	Inverted	Not inverted	-
09	Bit 9	Inverted	Not inverted	-
10	Bit 10	Inverted	Not inverted	-

11	Bit 11	Inverted	Not inverted	-
12	Bit 12	Inverted	Not inverted	-
13	Bit 13	Inverted	Not inverted	-
14	Bit 14	Inverted	Not inverted	-
15	Bit 15	Inverted	Not inverted	-

Dependency: Refer to: p2080, p2081, p2082, p2083, r2089

r2089[0...4] CO: Send binector-connector converter status word / Bin/con ZSW send

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

Can be changed: - | **Scaling:** - | **Dyn. index:** -

Unit group: - | **Unit selection:** - | **Func. diagram:** 2472

Min	Max	Factory setting
-	-	-

Description: Connector output to interconnect the status words to a PZD send word.

Index:
[0] = Status word 1
[1] = Status word 2
[2] = Free status word 3
[3] = Free status word 4
[4] = Free status word 5

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p2051, p2080, p2081, p2082, p2083

Note: r2089 together with p2080 to p2084 forms five binector-connector converters.

r2090.0...15 BO: PROFIdrive PZD1 receive bit-serial / PZD1 recv bitw

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

Can be changed: - | **Scaling:** - | **Dyn. index:** -

Unit group: - | **Unit selection:** - | **Func. diagram:** 2468, 9204, 9206, 9360

Min	Max	Factory setting
-	-	-

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	-

r2091.0...15 BO: PROFIdrive PZD2 receive bit-serial / PZD2 recv bitw

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2468, 9204, 9206
Min	**Max**	**Factory setting**
-	-	-

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2468, 9204, 9206
Min	**Max**	**Factory setting**
-	-	-

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2468, 9204, 9206
Min	**Max**	**Factory setting**
-	-	-

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2468, 9360
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial onward interconnection of a PZD word received from the PROFIdrive controller.

The PZD is selected via p2099[0].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p2099

r2095.0...15 BO: Connector-binector converter binector output / Con/bin outp

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2468, 9360
Min	**Max**	**Factory setting**
-	-	-

Description: Binector output for bit-serial interconnection of a PZD word received from the PROFIdrive controller.
The PZD is selected via p2099[1].

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	ON	OFF	-
01	Bit 1	ON	OFF	-
02	Bit 2	ON	OFF	-
03	Bit 3	ON	OFF	-
04	Bit 4	ON	OFF	-
05	Bit 5	ON	OFF	-
06	Bit 6	ON	OFF	-
07	Bit 7	ON	OFF	-
08	Bit 8	ON	OFF	-
09	Bit 9	ON	OFF	-
10	Bit 10	ON	OFF	-
11	Bit 11	ON	OFF	-
12	Bit 12	ON	OFF	-
13	Bit 13	ON	OFF	-
14	Bit 14	ON	OFF	-
15	Bit 15	ON	OFF	-

Dependency: Refer to: p2099

p2098[0...1] Inverter connector-binector converter binector output / Con/bin outp inv

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2468, 9360
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Setting to invert the individual binector outputs of the connector-binector converter.
Using p2098[0], the signals of connector input p2099[0] are influenced.
Using p2098[1], the signals of connector input p2099[1] are influenced.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Bit 0	Inverted	Not inverted	-
01	Bit 1	Inverted	Not inverted	-
02	Bit 2	Inverted	Not inverted	-
03	Bit 3	Inverted	Not inverted	-
04	Bit 4	Inverted	Not inverted	-
05	Bit 5	Inverted	Not inverted	-
06	Bit 6	Inverted	Not inverted	-
07	Bit 7	Inverted	Not inverted	-
08	Bit 8	Inverted	Not inverted	-
09	Bit 9	Inverted	Not inverted	-
10	Bit 10	Inverted	Not inverted	-
11	Bit 11	Inverted	Not inverted	-
12	Bit 12	Inverted	Not inverted	-
13	Bit 13	Inverted	Not inverted	-
14	Bit 14	Inverted	Not inverted	-
15	Bit 15	Inverted	Not inverted	-

Dependency: Refer to: r2094, r2095, p2099

p2099[0...1] CI: Connector-binector converter signal source / Con/bin S_src

Access level: 3	**Calculated:** -	**Data type:** U32 / Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2468, 9360
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the connector-binector converter.

A PZD receive word can be selected as signal source. The signals are available to be serially passed-on (interconnection).

Dependency: Refer to: r2094, r2095

Note: From the signal source set via the connector input, the corresponding lower 16 bits are converted.

p2099[0...1] together with r2094.0...15 and r2095.0...15 forms two connector-binector converters:

Connector input p2099[0] to binector output in r2094.0...15

Connector input p2099[1] to binector output in r2095.0...15

p2100[0...19] Change fault response fault number / Chng resp F_no

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8075
Min	**Max**	**Factory setting**
0	65535	0

Description: Selects the faults for which the fault response should be changed

Dependency: The fault is selected and the required response is set under the same index.

Refer to: p2101

Note: Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

p2101[0...19] Change fault response response / Chng resp resp

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8075
Min	**Max**	**Factory setting**
0	6	0

Description: Sets the fault response for the selected fault.

Value:
0: NONE
1: OFF1
2: OFF2
3: OFF3
5: STOP2
6: Internal armature short-circuit / DC braking

Dependency: The fault is selected and the required response is set under the same index.

Refer to: p2100

Notice: For the following cases, it is not possible to re-parameterize the fault response to a fault:

- fault number does not exist (exception value = 0).
- Message type is not "fault" (F).
- fault response is not permissible for the set fault number.

Note: Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

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.

For value = 1 (OFF1):

Braking along the ramp-function generator down ramp followed by a pulse inhibit.

For value = 2 (OFF2):
Internal/external pulse inhibit.
For value = 3 (OFF3):
Braking along the OFF3 down ramp followed by a pulse inhibit.
For value = 5 (STOP2):
n_set = 0
For 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.

p2103[0...n] BI: 1st acknowledge faults / 1st acknowledge

CU230P-2_DP
CU230P-2_PN

Access level: 3
Calculated: -
Data type: U32 / Binary
Can be changed: U, T
Scaling: -
Dyn. index: CDS, p0170
Unit group: -
Unit selection: -
Func. diagram: 2441, 2442, 2443, 2447, 2475, 2546, 9220, 9677, 9678

Min	Max	Factory setting
-	-	[0] 2090.7 [1] 722.2 [2] 2090.7 [3] 2090.7

Description: Sets the first signal source to acknowledge faults.
Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
Note: A fault acknowledgment is triggered with a 0/1 signal.

p2103[0...n] BI: 1st acknowledge faults / 1st acknowledge

CU230P-2_HVAC
CU230P-2_CAN
CU230P-2_BT

Access level: 3
Calculated: -
Data type: U32 / Binary
Can be changed: U, T
Scaling: -
Dyn. index: CDS, p0170
Unit group: -
Unit selection: -
Func. diagram: 2441, 2442, 2443, 2447, 2475, 2546, 9220, 9677, 9678

Min	Max	Factory setting
-	-	[0] 722.2 [1] 0 [2] 0 [3] 0

Description: Sets the first signal source to acknowledge faults.
Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
Note: A fault acknowledgment is triggered with a 0/1 signal.

p2104[0...n] BI: 2nd acknowledge faults / 2nd acknowledge

CU230P-2_DP
CU230P-2_PN

Access level: 3
Calculated: -
Data type: U32 / Binary
Can be changed: U, T
Scaling: -
Dyn. index: CDS, p0170
Unit group: -
Unit selection: -
Func. diagram: 2546, 8060

Min	Max	Factory setting
-	-	[0] 722.2 [1] 0 [2] 0 [3] 0

Description: Sets the second signal source to acknowledge faults.
Note: A fault acknowledgment is triggered with a 0/1 signal.

p2104[0...n]	BI: 2nd acknowledge faults / 2nd acknowledge		
CU230P-2_HVAC CU230P-2_CAN CU230P-2_BT	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2546, 8060
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the second signal source to acknowledge faults.

Note: A fault acknowledgment is triggered with a 0/1 signal.

p2105[0...n]	BI: 3rd acknowledge faults / 3rd acknowledge		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2546, 8060
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the third signal source to acknowledge faults.

Note: A fault acknowledgment is triggered with a 0/1 signal.

p2106[0...n]	BI: External fault 1 / External fault 1		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2546
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for external fault 1.

Dependency: Refer to: F07860

Note: An external fault is triggered with a 1/0 signal.

p2107[0...n]	BI: External fault 2 / External fault 2		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2546
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for external fault 2.

Dependency: Refer to: F07861

Note: An external fault is triggered with a 1/0 signal.

p2108[0...n]	BI: External fault 3 / External fault 3		
PM230 PM240 PM250, PM260	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2546
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for external fault 3.
External fault 3 is initiated by the following AND logic operation:
- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p3110, p3111, p3112
Refer to: F07862

Note: An external fault is triggered with a 1/0 signal.

p2108[0...n] BI: External fault 3 / External fault 3

PM330

	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2546
	Min	**Max**	**Factory setting**
	-	-	4022.1

Description: Sets the signal source for external fault 3.
External fault 3 is initiated by the following AND logic operation:
- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p3110, p3111, p3112
Refer to: F07862

Note: An external fault is triggered with a 1/0 signal.

r2109[0...63] Fault time removed in milliseconds / t_flt resolved ms

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8060
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the system runtime in milliseconds when the fault was removed.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2130, r2133, r2136, p8400

Notice: The time comprises r2136 (days) and r2109 (milliseconds).

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.

r2110[0...63] Alarm number / Alarm number

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8065
Min	**Max**	**Factory setting**
-	-	-

Description: This parameter is identical to r2122.

p2111 Alarm counter / Alarm counter

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8065
Min	**Max**	**Factory setting**
0	65535	0

Description: 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.

p2112[0...n]	**BI: External alarm 1 / External alarm 1**		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2546
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for external alarm 1.

Dependency: Refer to: A07850

Note: An external alarm is triggered with a 1/0 signal.

r2114[0...1]	**System runtime total / Sys runtime tot**		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

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 switched on, the counter continues to run with the last value that was saved.

p2116[0...n]	**BI: External alarm 2 / External alarm 2**		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2546
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for external alarm 2.

Dependency: Refer to: A07851

Note: An external alarm is triggered with a 1/0 signal.

p2117[0...n]	**BI: External alarm 3 / External alarm 3**		
PM230	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Binary
PM240	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
PM250, PM260	**Unit group:** -	**Unit selection:** -	**Func. diagram:** 2546
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for external alarm 3.

Dependency: Refer to: A07852

Note: An external alarm is triggered with a 1/0 signal.

p2117[0...n] BI: External alarm 3 / External alarm 3

PM330

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2546
Min	**Max**	**Factory setting**
-	-	4022.0

Description: Sets the signal source for external alarm 3.

Dependency: Refer to: A07852

Note: An external alarm is triggered with a 1/0 signal.

p2118[0...19] Change message type message number / Chng type msg_no

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8075
Min	**Max**	**Factory setting**
0	65535	0

Description: Selects faults or alarms for which the message type should be changed.

Dependency: Selects the fault or alarm selection and sets the required type of message realized under the same index.

Refer to: p2119

Note: Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.

p2119[0...19] Change message type type / Change type type

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8075
Min	**Max**	**Factory setting**
1	3	1

Description: Sets the message type for the selected fault or alarm.

Value:
1: Fault (F)
2: Alarm (A)
3: No message (N)

Dependency: Selects the fault or alarm selection and sets the required type of message realized under the same index.

Refer to: p2118

Note: Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.

The message type can only be changed for messages with the appropriate identification (exception, value = 0).

Example:

F12345(A) --> Fault F12345 can be changed to alarm A12345.

In this case, the message number that may be possibly entered in p2100[0...19] and p2126[0...19] is automatically removed.

r2120 CO: Sum of fault and alarm buffer changes / Sum buffer changed

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8065
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the sum of all of the fault and alarm buffer changes in the drive unit.

Dependency: Refer to: r0944, r2121

r2121 CO: Counter alarm buffer changes / Alrm buff changed

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8065
Min	**Max**	**Factory setting**
-	-	-

Description: This counter is incremented every time the alarm buffer changes.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125

r2122[0...63] Alarm code / Alarm code

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8065
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of alarms that have occurred.

Dependency: Refer to: r2110, r2123, r2124, r2125, r2134, r2145, r2146, r3121, r3123

Notice: The properties of the alarm buffer should be taken from the corresponding product documentation.

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
Alarm buffer structure (general principle):
r2122[0], r2124[0], r2123[0], r2125[0] --> alarm 1 (the oldest)
. . .
r2122[7], r2124[7], r2123[7], r2125[7] --> Alarm 8 (the latest)
When the alarm buffer is full, the alarms that have gone are entered into the alarm history:
r2122[8], r2124[8], r2123[8], r2125[8] --> Alarm 1 (the latest)
. . .
r2122[63], r2124[63], r2123[63], r2125[63] --> alarm 56 (the oldest)

r2123[0...63] Alarm time received in milliseconds / t_alarm recv ms

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8065
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the system runtime in milliseconds when the alarm occurred.

Dependency: Refer to: r2110, r2122, r2124, r2125, r2134, r2145, r2146, p8400

Notice: The time comprises r2145 (days) and r2123 (milliseconds).

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the alarm buffer and the assignment of the indices is shown in r2122.

r2124[0...63] Alarm value / Alarm value

Access level: 3	**Calculated:** -	**Data type:** Integer32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8065
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the active alarm (as integer number).

Dependency: Refer to: r2110, r2122, r2123, r2125, r2134, r2145, r2146, r3121, r3123

Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the alarm buffer and the assignment of the indices is shown in r2122.

r2125[0...63] Alarm time removed in milliseconds / t_alarm res ms

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8065
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the system runtime in milliseconds when the alarm was cleared.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2134, r2145, r2146, p8400

Notice: The time comprises r2146 (days) and r2125 (milliseconds).

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

The structure of the alarm buffer and the assignment of the indices is shown in r2122.

p2126[0...19] Change acknowledge mode fault number / Chng ackn F_no

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8075
Min	**Max**	**Factory setting**
0	65535	0

Description: Selects the faults for which the acknowledge mode is to be changed

Dependency: Selects the faults and sets the required acknowledge mode realized under the same index

Refer to: p2127

Note: Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

p2127[0...19] Change acknowledge mode mode / Chng ackn mode

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8075
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the acknowledge mode for selected fault.

Value:
1: Acknowledgment only using POWER ON
2: Ack IMMEDIATELY after the fault cause has been removed

Dependency: Selects the faults and sets the required acknowledge mode realized under the same index

Refer to: p2126

Notice: It is not possible to re-parameterize the acknowledge mode for a fault in the following cases:

- fault number does not exist (exception value = 0).
- Message type is not "fault" (F).
- Acknowledge mode is not permissible for the set fault number.

Note: Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

The acknowledge mode can only be changed for faults with the appropriate identification.

Example:

F12345 and acknowledge mode = IMMEDIATELY (POWER ON)

--> The acknowledge mode can be changed from IMMEDIATELY to POWER ON.

p2128[0...15] Faults/alarms trigger selection / F/A trigger sel

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8050, 8070
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the faults/alarms for which a trigger signal should be generated in r2129.0...15.

Dependency: If the fault/alarm set in p2128[0...15] occurs, then the particular binector output r2129.0...15 is set.

Refer to: r2129

r2129.0...15 CO/BO: Faults/alarms trigger word / F/A trigger word

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8070
Min	**Max**	**Factory setting**
-	-	-

Description: 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 recv days

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8060
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the system runtime in days when the fault occurred.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109, r2133, r2136, p8401

Notice: The time comprises r2130 (days) and r0948 (milliseconds).

The value displayed in r2130 refers to January 1, 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

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8060
Min	**Max**	**Factory setting**
-	-	-

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

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8065
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the code of the last alarm that occurred.

Note: 0: No alarm present.

r2133[0...63] Fault value for float values / Fault val float

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8060
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the fault that occurred for float values.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2136

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

r2134[0...63] Alarm value for float values / Alarm value float

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8065
Min	**Max**	**Factory setting**
-	-	-

Description: Displays additional information about the active alarm for float values.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125, r2145, r2146, r3121, r3123

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

r2135.12...15 CO/BO: Status word faults/alarms 2 / ZSW fault/alarm 2

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2548
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the second status word of faults and alarms.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
12	Fault motor overtemperature	Yes	No	8016
13	Fault power unit thermal overload	Yes	No	8021
14	Alarm motor overtemperature	Yes	No	8016
15	Alarm power unit thermal overload	Yes	No	8021

r2136[0...63] Fault time removed in days / t_flt resolv days

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8060
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the system runtime in days when the fault was removed.

Dependency: Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, p8401

Notice: The time comprises r2136 (days) and r2109 (milliseconds).

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

r2138.7...15 CO/BO: Control word faults/alarms / STW fault/alarm

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2546
Min	**Max**	**Factory setting**
-	-	-

Description: 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

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2548
Min	**Max**	**Factory setting**
-	-	-

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: For 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).

For bit 06, 08:

These status bits are used for internal diagnostic purposes only.

For bits 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		
	Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8010
	Min	**Max**	**Factory setting**
	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		
	Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8010
	Min	**Max**	**Factory setting**
	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).

Dependency: Refer to: p2142, r2199

p2142[0...n]	Hysteresis speed 1 / n_hysteresis 1		
	Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8010
	Min	**Max**	**Factory setting**
	0.00 [rpm]	300.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the signal "f or n / v comparison value reached or exceeded" (BO: r2199.1).

Dependency: Refer to: p2141, r2199

p2144[0...n]	BI: Motor stall monitoring enable (negated) / Mot stall enab neg		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 8012
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the negated enable (0 = enable) of the motor stall monitoring.

Dependency: Refer to: p2163, p2164, p2166, r2197, r2198
Refer to: F07900

Note: When interconnecting the enable signal with r2197.7 then the stall signal is suppressed if there is no speed setpoint - actual value deviation.

r2145[0...63]	Alarm time received in days / t_alarm recv days		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 8065
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the system runtime in days when the alarm occurred.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2146, p8401

Notice: The time comprises r2145 (days) and r2123 (milliseconds).

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

r2146[0...63] Alarm time removed in days / t_alarm res days

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8065
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the system runtime in days when the alarm was cleared.

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2145, p8401

Notice: The time comprises r2146 (days) and r2125 (milliseconds).

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

p2148[0...n] BI: RFG active / RFG active

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 8011
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the signal "ramp-function generator active" for the following signals/messages:

"Speed setpoint - actual value deviation within tolerance t_on" (BO: r2199.4)

"Ramp-up/ramp-down completed" (BO: r2199.5)

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

Note: The binector input is automatically interconnected to r1199.2 as a default setting.

p2149[0...n] Monitoring configuration / Monit config

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 1001 bin

Description: Sets the configuration for messages and monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Dependency: Refer to: r2197

Refer to: A07903

Note: For bit 00:

Alarm A07903 is output when the bit is set with r2197.7 = 0 (n_set <> n_act).

For bit 01:

When the bit is set, the load monitoring is only executed in the 1st quadrant as a result of the positive characteristic parameters (p2182 ... p2190).

For bit 03:

When the bit is set, r2197.1 and r2197.2 are determined using separate hysteresis functions.

For bit 05:

When this bit is set, a change to open-loop speed controlled operation is only possible when the motor is stationary.

p2150[0...n] Hysteresis speed 3 / n_hysteresis 3

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8010, 8011, 8022
Min	**Max**	**Factory setting**
0.00 [rpm]	300.00 [rpm]	2.00 [rpm]

Description: 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)

Dependency: Refer to: p2161, r2197, r2199

p2151[0...n] CI: Speed setpoint for messages/signals / n_set for msg

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 8011
Min	**Max**	**Factory setting**
-	-	1170[0]

Description: Sets the signal source for the speed setpoint for the following messages:
"Speed setpoint - actual value deviation within tolerance t_off" (BO: r2197.7)
"Ramp-up/ramp-down completed" (BO: r2199.5)
"|n_set| < p2161" (BO: r2198.4)
"n_set > 0" (BO: r2198.5)

Dependency: Refer to: r2197, r2198, r2199

p2153[0...n] Speed actual value filter time constant / n_act_filt T

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 8010
Min	**Max**	**Factory setting**
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

p2155[0...n] Speed threshold 2 / n_thresh val 2

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8010
Min	**Max**	**Factory setting**
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

p2156[0...n] On delay comparison value reached / t_on cmpr val rchd

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 8010
Min	**Max**	**Factory setting**
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

p2161[0...n] Speed threshold 3 / n_thresh val 3

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8010, 8011
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	5.00 [rpm]

Description: Sets the speed threshold value for the signal "|n_act| < speed threshold value 3" (BO: r2199.0).

Dependency: Refer to: p2150, r2199

p2162[0...n] Hysteresis speed n_act > n_max / Hyst n_act>n_max

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8010
Min	**Max**	**Factory setting**
0.00 [rpm]	60000.00 [rpm]	0.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the signal "n_act > n_max" (BO: r2197.6).

Dependency: Refer to: r1084, r1087, r2197

Notice: For p0322 = 0, the following applies: p2162 <= 0.1 * p0311

For p0322 > 0, the following applies: p2162 <= 1.02 * p0322 - p1082

If one of the conditions is violated, p2162 is appropriately and automatically reduced when exiting the commissioning mode.

Note: 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.

p2163[0...n] Speed threshold 4 / n_thresh val 4

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8011
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	90.00 [rpm]

Description: Sets the speed threshold value for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).

Dependency: Refer to: p2164, p2166, r2197

p2164[0...n] Hysteresis speed 4 / n_hysteresis 4

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8011
Min	**Max**	**Factory setting**
0.00 [rpm]	200.00 [rpm]	2.00 [rpm]

Description: Sets the hysteresis speed (bandwidth) for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).

Dependency: Refer to: p2163, p2166, r2197

p2165[0...n] Load monitoring stall monitoring upper threshold / Stall_mon up thr

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	0.00 [rpm]

Description: Sets the upper speed threshold of the stall monitoring of the pump or fan.

The lower limit is formed by the speed threshold 1 of the load monitoring (p2182).

The stall monitoring is active between p2182 and p2165.

Dependency: The following applies: p2182 < p2165

Refer to: p2181, p2182, p2193

Refer to: A07891, F07894, A07926

Note: For p2165 = 0 or p2165 < p2182, the following applies:

There is no special stall monitoring for the pump/fan, but only the remaining load monitoring functions (e.g. leakage monitoring for a pump) for the pump or fan are active.

p2166[0...n] Off delay n_act = n_set / t_del_off n_i=n_so

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 8011
Min	**Max**	**Factory setting**
0.0 [ms]	10000.0 [ms]	200.0 [ms]

Description: Sets the switch-off delay time for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).

Dependency: Refer to: p2163, p2164, r2197

p2167[0...n] Switch-on delay n_act = n_set / t_on n_act=n_set

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 8011
Min	**Max**	**Factory setting**
0.0 [ms]	10000.0 [ms]	200.0 [ms]

Description: Sets the switch-on delay for the "speed setpoint - actual value deviation in tolerance t_on" signal/message (BO: r2199.4).

p2168[0...n] Load monitoring stall monitoring torque threshold / Stall_mon M_thresh

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	10000000.00 [Nm]

Description: Sets the torque threshold of the stall monitoring of the pump or fan.

If, in the monitored speed range from p2182 to p2165, the torque exceeds this threshold, then this is evaluated as either the motor having stalled or heavy-duty starting.

Dependency: For pumps, the following applies (p2193 = 4):

- the leakage characteristic must lie below the torque threshold for the stall monitoring
- the torque threshold for dry running operation must lie below the torque threshold for stall monitoring

For fans, the following applies (p2193 = 5):

- the torque threshold for the stall monitoring must lie above the torque threshold to identify belt breakage (p2191).

Refer to: p2165, p2181, p2191, p2193

Refer to: A07891, F07894, A07926

Note: The following applies for p2168 = 0:

The special stall monitoring for pump/fan is deactivated.

Then, only the remaining load monitoring functions (e.g. the leakage monitoring for a pump) for pump or fan are realized.

r2169 CO: Actual speed smoothed signals / n_act smth message

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8010
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output of the smoothed speed actual value for messages.

Dependency: Refer to: p2153

p2170[0...n] Current threshold value / I_thres

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2002	**Dyn. index:** DDS, p0180
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 8022
Min	**Max**	**Factory setting**
0.00 [Arms]	10000.00 [Arms]	0.00 [Arms]

Description: Sets the absolute current threshold for the messages.

"I_act >= I_threshold p2170" (BO: r2197.8)

"I_act < I_threshold p2170" (BO: r2198.8)

Dependency: Refer to: p2171

p2171[0...n] Current threshold value reached delay time / I_thresh rch t_del

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 8022
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	10 [ms]

Description: Sets the delay time for the comparison of the current actual value (r0068) with the current threshold value (p2170).

Dependency: Refer to: p2170

p2172[0...n] DC link voltage threshold value / Vdc thresh val

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2001	**Dyn. index:** DDS, p0180
Unit group: 5_2	**Unit selection:** p0505	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [V]	2000 [V]	800 [V]

Description: Sets the DC link voltage threshold value for the following messages:
"Vdc_act <= Vdc_threshold p2172" (BO: r2197.9)
"Vdc_act > Vdc_threshold p2172" (BO: r2197.10)

Dependency: Refer to: p2173

p2173[0...n] DC link voltage comparison delay time / t_del Vdc

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	10 [ms]

Description: Sets the delay time for the comparison of the DC link voltage r0070 with the threshold value p2172.

Dependency: Refer to: p2172

p2175[0...n] Motor blocked speed threshold / Mot lock n_thresh

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 8012
Min	**Max**	**Factory setting**
0.00 [rpm]	210000.00 [rpm]	120.00 [rpm]

Description: Sets the speed threshold for the message "Motor blocked" (BO: r2198.6).

Dependency: Refer to: p0500, p2177, r2198
Refer to: F07900

Note: The following applies for sensorless vector control for induction motors:
At low speeds in open-loop speed controlled operation (see p1755, p1756), a blocked motor cannot be detected.

p2177[0...n] Motor blocked delay time / Mot lock t_del

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 8012
Min	**Max**	**Factory setting**
0.000 [s]	65.000 [s]	3.000 [s]

Description: Sets the delay time for the message "Motor blocked" (BO: r2198.6).

Dependency: Refer to: p0500, p2175, r2198
Refer to: F07900

Note: The following applies for sensorless vector control:
At low speeds a locked motor can only be detected if no change is made to open-loop speed controlled operation. If this is the case, the value in p2177 must be reduced accordingly (p2177 < p1758) before time p2177 has elapsed in order to detect the locked state reliably.
As countermeasure, it is generally also possible to set p1750.6. This is only not permitted if the drive is slowly reversed by the load at the torque limit (speed below p1755 for longer than p1758).

p2178[0...n] Motor stalled delay time / Mot stall t_del

Access level: 3	**Calculated:** p0340 = 1,3	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 8012
Min	**Max**	**Factory setting**
0.000 [s]	10.000 [s]	0.010 [s]

Description: Sets the delay time for the message "Motor stalled" (BO: r2198.7).

Dependency: Refer to: r2198

Note: In the open-loop speed controlled operating range (see p1755, p1756), vector control stall monitoring depends on threshold p1745.

At higher speeds, the difference between flux setpoint r0083 and flux actual value r0084 is monitored.

p2179[0...n] Output load identification current limit / Outp_ld iden I_lim

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2002	**Dyn. index:** DDS, p0180
Unit group: 6_2	**Unit selection:** p0505	**Func. diagram:** 8022
Min	**Max**	**Factory setting**
0.00 [Arms]	1000.00 [Arms]	0.00 [Arms]

Description: 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).

Dependency: Refer to: p2180

Notice: For synchronous motors the output current can be almost zero under no load conditions.

Note: Missing output load is signaled in the following cases:

- the motor is not connected.
- a phase failure has occurred.

p2180[0...n] Output load detection delay time / Out_load det t_del

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 8022
Min	**Max**	**Factory setting**
0 [ms]	10000 [ms]	2000 [ms]

Description: Sets the delay time for the message "output load not available" (r2197.11 = 1).

Dependency: Refer to: p2179

p2181[0...n] Load monitoring response / Load monit resp

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
0	8	0

Description: Sets the response when evaluating the load monitoring.

Value:

0: Load monitoring disabled
1: A07920 for torque/speed too low
2: A07921 for torque/speed too high
3: A07922 for torque/speed out of tolerance
4: F07923 for torque/speed too low
5: F07924 for torque/speed too high
6: F07925 for torque/speed out of tolerance
7: Pump/fan load monitoring as alarm
8: Pump/fan load monitoring as fault

Dependency: Refer to: p2182, p2183, p2184, p2185, p2186, p2187, p2188, p2189, p2190, p2192, p2193, r2198, p3230, p3231

Refer to: A07891, A07892, A07893, F07894, F07895, F07896, A07920, A07921, A07922, F07923, F07924, F07925

Note: The response to the faults F07923 ... F07925 can be set.
This parameter setting has no effect on the generation of fault F07936.
p2181 = 7, 8 can only be combined with p2193 = 4, 5.

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
Unit 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
Refer to: A07926

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
Unit 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
Refer to: A07926

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
Unit 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
Refer to: A07926

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.

p2185[0...n] Load monitoring torque threshold 1 upper / M_thresh 1 upper

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	10000000.00 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2185 > p2186
Refer to: p2182, p2186
Refer to: A07926

Note: The upper envelope curve is defined by p2185, p2187 and p2189.

p2186[0...n] Load monitoring torque threshold 1 lower / M_thresh 1 lower

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2186 < p2185
Refer to: p2182, p2185
Refer to: A07926

Note: The lower envelope curve is defined by p2186, p2188 and p2190.

p2187[0...n] Load monitoring torque threshold 2 upper / M_thresh 2 upper

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	10000000.00 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2187 > p2188
Refer to: p2183, p2188
Refer to: A07926

Note: The upper envelope curve is defined by p2185, p2187 and p2189.

p2188[0...n] Load monitoring torque threshold 2 lower / M_thresh 2 lower

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2188 < p2187
Refer to: p2183, p2187
Refer to: A07926

Note: The lower envelope curve is defined by p2186, p2188 and p2190.

p2189[0...n] Load monitoring torque threshold 3 upper / M_thresh 3 upper

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	10000000.00 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2189 > p2190

Refer to: p2184, p2190

Refer to: A07926

Note: The upper envelope curve is defined by p2185, p2187 and p2189.

p2190[0...n] Load monitoring torque threshold 3 lower / M_thresh 3 lower

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Sets the speed/torque envelope curve for load monitoring.

Dependency: The following applies: p2190 < p2189

Refer to: p2184, p2189

Refer to: A07926

Note: The lower envelope curve is defined by p2186, p2188 and p2190.

p2191[0...n] Load monitoring torque threshold no load / M_thresh no load

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 7_1	**Unit selection:** p0505	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
0.00 [Nm]	20000000.00 [Nm]	0.00 [Nm]

Description: Setting of the torque threshold to identify dry running operation for pumps or belt breakage for fans.

Dependency: The following applies: p2191< p2168 if p2168 <> 0

Refer to: p2181, p2182, p2184, p2193

Refer to: A07892, F07895, A07926

Note: For the setting p2191 = 0, the monitoring for dry running operation or belt breakage is deactivated.

Pre-assignment: p2191 = 5 % of the rated motor torque (p0333).

p2192[0...n] Load monitoring delay time / Load monit t_del

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
0.00 [s]	65.00 [s]	10.00 [s]

Description: Sets the delay time to evaluate the load monitoring.

p2193[0...n] Load monitoring configuration / Load monit config

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
0	5	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
4: Monitoring pump and load failure
5: Monitoring fan and load failure

Dependency: Refer to: p2182, p2183, p2184, p2185, p2186, p2187, p2188, p2189, p2190, p2192, r2198, p3230, p3231, p3232

Refer to: A07891, A07892, A07893, F07894, F07895, F07896, A07920, A07921, A07922, F07923, F07924, F07925, F07936

Note: p2193 = 4, 5 can only be combined with p2181 = 7, 8.

r2197.0...13 CO/BO: Status word monitoring 1 / ZSW monitor 1

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2534
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the first status word of the monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	|n_act| <= n_min p1080	Yes	No	8022
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	8022
05	|n_act| <= n_standstill p1226	Yes	No	8022
06	|n_act| > n_max	Yes	No	8010
07	Speed setpoint - actual value deviation in tolerance t_off	Yes	No	8011
08	I_act >= I_threshold value p2170	Yes	No	8022
09	Vdc_act <= Vdc_threshold value p2172	Yes	No	8022
10	Vdc_act > Vdc_threshold value p2172	Yes	No	8022
11	Output load is not present	Yes	No	8022
13	|n_act| > n_max (F07901)	Yes	No	-

Notice: For 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: For bit 00:

The threshold value is set in p1080 and the hysteresis in p2150.

For bit 01, 02:

The threshold value is set in p2155 and the hysteresis in p2140.

For bit 03:

1 signal direction of rotation positive.

0 signal: direction of rotation negative.

The hysteresis is set in p2150.

For bit 04:

The threshold value is set in r1119 and the hysteresis in p2150.

For bit 05:

The threshold value is set in p1226 and the delay time in p1228.

For bit 06:
The hysteresis is set in p2162.
For bit 07:
The threshold value is set in p2163 and the hysteresis is set in p2164.
For bit 08:
The threshold value is set in p2170 and the delay time in p2171.
For bit 09, 10:
The threshold value is set in p2172 and the delay time in p2173.
For bit 11:
The threshold value is set in p2179 and the delay time in p2180.
For bit 13:
Only for internal Siemens use.

r2198.4...12 CO/BO: Status word monitoring 2 / ZSW monitor 2

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2536
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the second status word of the monitoring functions.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	8022
11	Load in the alarm range	Yes	No	8013
12	Load in the fault range	Yes	No	8013

Note: For bit 12:
This bit is reset after the fault cause disappears, even if the fault itself is still present.

r2199.0...5 CO/BO: Status word monitoring 3 / ZSW monitor 3

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2537
Min	**Max**	**Factory setting**
-	-	-

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 setpoint - actual value deviation in tolerance t_on	Yes	No	8011
05	Ramp-up/ramp-down completed	Yes	No	8011

Note: For bit 00:
The speed threshold value 3 is set in p2161.
For 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.

p2200[0...n] BI: Technology controller enable / Tec_ctrl enable

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to switch in/switch out the technology controller.
The technology controller is switched in with a 1 signal.

p2201[0...n] CO: Technology controller fixed value 1 / Tec_ctrl fix val1

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950, 7951
Min	**Max**	**Factory setting**
-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

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950, 7951
Min	**Max**	**Factory setting**
-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

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950, 7951
Min	**Max**	**Factory setting**
-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.

p2204[0...n] CO: Technology controller fixed value 4 / Tec_ctr fix val 4

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950, 7951
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	40.00 [%]

Description: Sets the value for fixed value 4 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2205[0...n] CO: Technology controller fixed value 5 / Tec_ctr fix val 5

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	50.00 [%]

Description: Sets the value for fixed value 5 of the technology controller.
Dependency: Refer to: p2220, p2221, p2222, p2223, r2224, r2229
Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

p2206[0...n] CO: Technology controller fixed value 6 / Tec_ctr fix val 6

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	60.00 [%]

Description: Sets the value for fixed value 6 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.

p2207[0...n] CO: Technology controller fixed value 7 / Tec_ctr fix val 7

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	70.00 [%]

Description: Sets the value for fixed value 7 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.

p2208[0...n] CO: Technology controller fixed value 8 / Tec_ctr fix val 8

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	80.00 [%]

Description: Sets the value for fixed value 8 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.

p2209[0...n] CO: Technology controller fixed value 9 / Tec_ctr fix val 9

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	90.00 [%]

Description: Sets the value for fixed value 9 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.

p2210[0...n]	CO: Technology controller fixed value 10 / Tec_ctr fix val 10		
	Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
	Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950
	Min	**Max**	**Factory setting**
	-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the value for fixed value 10 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.

p2211[0...n]	CO: Technology controller fixed value 11 / Tec_ctr fix val 11		
	Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
	Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950
	Min	**Max**	**Factory setting**
	-200.00 [%]	200.00 [%]	110.00 [%]

Description: Sets the value for fixed value 11 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.

p2212[0...n]	CO: Technology controller fixed value 12 / Tec_ctr fix val 12		
	Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
	Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950
	Min	**Max**	**Factory setting**
	-200.00 [%]	200.00 [%]	120.00 [%]

Description: Sets the value for fixed value 12 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.

p2213[0...n]	CO: Technology controller fixed value 13 / Tec_ctr fix val 13		
	Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
	Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950
	Min	**Max**	**Factory setting**
	-200.00 [%]	200.00 [%]	130.00 [%]

Description: Sets the value for fixed value 13 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.

p2214[0...n]	CO: Technology controller fixed value 14 / Tec_ctr fix val 14		
	Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
	Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950
	Min	**Max**	**Factory setting**
	-200.00 [%]	200.00 [%]	140.00 [%]

Description: Sets the value for fixed value 14 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.

p2215[0...n] CO: Technology controller fixed value 15 / Tec_ctr fix val 15

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	150.00 [%]

Description: Sets the value for fixed value 15 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.

p2216[0...n] Technology controller fixed value selection method / Tec_ctr FixVal sel

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 7950, 7951
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the method to select the fixed setpoints.

Value:
1: Direct selection
2: Binary selection

p2220[0...n] BI: Technology controller fixed value selection bit 0 / Tec_ctrl sel bit 0

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7950, 7951
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select a fixed value of the technology controller.

Dependency: Refer to: p2221, p2222, p2223

p2221[0...n] BI: Technology controller fixed value selection bit 1 / Tec_ctrl sel bit 1

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7950, 7951
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select a fixed value of the technology controller.

Dependency: Refer to: p2220, p2222, p2223

p2222[0...n] BI: Technology controller fixed value selection bit 2 / Tec_ctrl sel bit 2

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7950, 7951
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select a fixed value of the technology controller.

Dependency: Refer to: p2220, p2221, p2223

p2223[0...n] BI: Technology controller fixed value selection bit 3 / Tec_ctrl sel bit 3

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7950, 7951
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to select a fixed value of the technology controller.

Dependency: Refer to: p2220, p2221, p2222

r2224 CO: Technology controller fixed value effective / Tec_ctr FixVal eff

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7950, 7951
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the selected and active fixed value of the technology controller.

Dependency: Refer to: r2229

r2225.0 CO/BO: Technology controller fixed value selection status word / Tec_ctr FixVal ZSW

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the fixed value selection of the technology controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Technology controller fixed value selected	Yes	No	7950, 7951

r2229 Technology controller number actual / Tec_ctrl No. act

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7950
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of the selected fixed setpoint of the technology controller.

Dependency: Refer to: r2224

p2230[0...n] Technology controller motorized potentiometer configuration / Tec_ctr mop config

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 7954
Min	**Max**	**Factory setting**
-	-	0000 0100 bin

Description: Sets the configuration for the motorized potentiometer of the technology controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Dependency: Refer to: r2231, p2240

Note: For 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.

For bit 02:

0: Without initial rounding-off

1: With initial rounding-off.

The selected ramp-up/down time is correspondingly exceeded. The initial rounding-off is a sensitive way of specifying small changes (progressive reaction when keys are pressed). The jerk for initial rounding is independent of the ramp-up time and only depends on the selected maximum value (p2237).

It is calculated as follows:

r = 0.0001 x max(p2237, |p2238|) [%] / 0.13^2 [s^2]

The jerk is effective until the maximum acceleration is reached (a_max = p2237 [%] / p2247 [s] or a_max = p2238 [%] / p2248 [s]), after which the drive continues to run linearly with constant acceleration.

The higher the maximum acceleration (the lower that p2247 is), the longer the ramp-up time increases with respect to the set ramp-up time.

For bit 03:

0: Non-volatile data save deactivated.

1. The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for p2230.0 = 1).

For bit 04:

When the bit is set, the ramp-function generator is computed independent of the pulse enable. The actual output value of the motorized potentiometer is always in r2250.

r2231 Technology controller motorized potentiometer setpoint memory / Tec_ctrl mop mem

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7954
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the setpoint memory for the motorized potentiometer of the technology controller.

For p2230.0 = 1, the last setpoint that was saved is entered after ON.

Dependency: Refer to: p2230

p2235[0...n] BI: Technology controller motorized potentiometer raise setpoint / Tec_ctrl mop raise

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7954
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to continually increase the setpoint for the motorized potentiometer of the technology controller.

The setpoint change (CO: r2250) depends on the set ramp-up time (p2247) and the duration of the signal that is present (BI: p2235).

Dependency: Refer to: p2236

p2236[0...n] BI: Technology controller motorized potentiometer lower setpoint / Tec_ctrl mop lower

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7954
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to continually reduce the setpoint for the motorized potentiometer of the technology controller.

The setpoint change (CO: r2250) depends on the set ramp-down time (p2248) and the duration of the signal that is present (BI: p2236).

Dependency: Refer to: p2235

p2237[0...n] Technology controller motorized potentiometer maximum value / Tec_ctrl mop max

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7954
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the maximum value for the motorized potentiometer of the technology controller.

Dependency: Refer to: p2238

p2238[0...n] Technology controller motorized potentiometer minimum value / Tec_ctrl mop min

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7954
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	-100.00 [%]

Description: Sets the minimum value for the motorized potentiometer of the technology controller.

Dependency: Refer to: p2237

p2240[0...n] Technology controller motorized potentiometer starting value / Tec_ctrl mop start

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7954
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	0.00 [%]

Description: Sets the starting value for the motorized potentiometer of the technology controller.

For p2230.0 = 0, this setpoint is entered after ON.

Dependency: Refer to: p2230

r2245 CO: Technology controller mot. potentiometer setpoint before RFG / Tec_ctr mop befRFG

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7954
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

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

Dependency: Refer to: r2250

p2247[0...n] Technology controller motorized potentiometer ramp-up time / Tec_ctr mop t_r-up

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 7954
Min	**Max**	**Factory setting**
0.0 [s]	1000.0 [s]	10.0 [s]

Description: Sets the ramp-up time for the internal ramp-function generator for the motorized potentiometer of the technology controller.

Dependency: Refer to: p2248

Note: The time is referred to 100 %.

When the initial rounding-off is activated (p2230.2 = 1) the ramp-up is correspondingly extended.

p2248[0...n] Technology controller motorized potentiometer ramp-down time / Tec_ctrMop t_rdown

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 7954
Min	**Max**	**Factory setting**
0.0 [s]	1000.0 [s]	10.0 [s]

Description: Sets the ramp-down time for the internal ramp-function generator for the motorized potentiometer of the technology controller.

Dependency: Refer to: p2247

Note: The time is referred to 100 %.

When the initial rounding-off is activated (p2230.2 = 1) the ramp-down is correspondingly extended.

r2250 CO: Technology controller motorized potentiometer setpoint after RFG / Tec_ctr mop aftRFG

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7954
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the effective setpoint after the internal ramp-function generator for the motorized potentiometer of the technology controller.

Dependency: Refer to: r2245

p2251 Technology controller mode / Tec_ctrl mode

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0	0	0

Description: Sets the mode for using the technology controller output.

Value: 0: Technology controller as main speed setpoint

Dependency: p2251 = 0 is only effective if the enable signal of the technology controller is interconnected (p2200 > 0).

p2252 Technology controller configuration / Tec_ctrl config

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the configuration of the technology controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
04	Ramp-up/ramp-down function generator bypass	Deactivated	Activated	-
05	Integrator active for skip speeds	Yes	No	-
06	Internal controller limit not displayed	Yes	No	-
07	Activate Kp adaptation	Yes	No	7958
08	Activate Tn adaptation	Yes	No	7958

Dependency: For bit 04 = 0:

The setting is only effective when the PID controller is deactivated.

Caution: For bit 04 = 1:

The PID controller can oscillate if the ramp-up and ramp-down times of the speed setpoint channel are not taken into account when setting controller parameters p2280 and p2285.

Note: For bit 04 = 0:

The ramp-function generator in the speed setpoint channel is bypassed when the technology controller is operational.

As a consequence, ramp times p1120, p1121 are not taken into consideration when configuring the controller.

For bit 04 = 1:

The ramp-function generator in the speed setpoint channel is not bypassed when the technology controller is operational.

As a consequence, the ramp-up and ramp-down times (p1120, p1121) remain effective, and must be taken into account as controlled system variables when setting the PID controller parameters (p2280, p2285).

The enable ramps of the PID controller are ensured in this setting by p1120, p1121 as well as rounding functions p1130 and p1131. The ramp-up/ramp-down time of the PID controller limiting p2293 must be set appropriately shorter, as otherwise this has an impact on the speed setpoint channel.

For bit 05 = 0:

The integral component of the PID controller is held if a skip band or the minimum speed range is passed through in the speed set point channel.

This prevents the speed from oscillating between the edges of the skip band.

For bit 05 = 1:

The setting is only effective if a skip band is no longer active.

The integral component of the PID controller is not held in the range of the skip speeds.

The skip band is passed through even for small system deviations and low controller gain factors. In so doing, the controller integral time must be selected large enough so that no undesirable speed oscillations occur between the skip band edges.

The influence of a minimum speed p1080 on the integration behavior can be reduced by raising the lower PID controller limit to p1080 / p2000 * 100%.

For bit 06 = 1:

In r2349, bit 10 and bit 11 are not displayed when reaching internal limits (e.g. for OFF1/3).

p2253[0...n] CI: Technology controller setpoint 1 / Tec_ctrl setp 1

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setpoint 1 of the technology controller.

Dependency: Refer to: p2254, p2255

p2254[0...n] CI: Technology controller setpoint 2 / Tec_ctrl setp 2

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setpoint 2 of the technology controller.

Dependency: Refer to: p2253, p2256

p2255 Technology controller setpoint 1 scaling / Tec_ctrl set1 scal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the scaling for the setpoint 1 of the technology controller.

Dependency: Refer to: p2253

p2256 Technology controller setpoint 2 scaling / Tec_ctrl set2 scal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the scaling for the setpoint 2 of the technology controller.

Dependency: Refer to: p2254

p2257 Technology controller ramp-up time / Tec_ctrl t_ramp-up

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-up time of the technology controller.

Dependency: Refer to: p2258

Note: The ramp-up time is referred to 100 %.

p2258 Technology controller ramp-down time / Tec_ctrl t_ramp-dn

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-down time of the technology controller.

Dependency: Refer to: p2257

Note: The ramp-down time is referred to 100 %.

r2260 CO: Technology controller setpoint after ramp-function generator / Tec_ctr set aftRFG

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Sets the setpoint after the ramp-function generator of the technology controller.

p2261 Technology controller setpoint filter time constant / Tec_ctrl set T

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	0.000 [s]

Description: Sets the time constant for the setpoint filter (PT1) of the technology controller.

r2262 CO: Technology controller setpoint after filter / Tec_ctr set aftFlt

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the smoothed setpoint after the setpoint filter (PT1) of the technology controller.

p2263 Technology controller type / Tec_ctrl type

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the type of technology controller.

Value:
0: D component in the actual value signal
1: D component in system deviation

p2264[0...n] CI: Technology controller actual value / Tec_ctrl act val

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the actual value of the technology controller.

p2265 Technology controller actual value filter time constant / Tec_ctrl act T

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	0.000 [s]

Description: Sets the time constant for the actual value filter (PT1) of the technology controller.

r2266 CO: Technology controller actual value after filter / Tec_ctr act aftFlt

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the smoothed actual value after the filter (PT1) of the technology controller.

p2267 Technology controller upper limit actual value / Tec_ctrl u_lim act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the upper limit for the actual value signal of the technology controller.

Dependency: Refer to: p2264, p2265, p2271
Refer to: F07426

Notice: If the actual value exceeds this upper limit, this results in fault F07426.

p2268 Technology controller lower limit actual value / Tec_ctrl l_lim act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	-100.00 [%]

Description: Sets the lower limit for the actual value signal of the technology controller.

Dependency: Refer to: p2264, p2265, p2271

Refer to: F07426

Notice: If the actual value falls below this lower limit, this results in fault F07426.

p2269 Technology controller gain actual value / Tech_ctrl gain act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0.00 [%]	500.00 [%]	100.00 [%]

Description: Sets the scaling factor for the actual value of the technology controller.

Dependency: Refer to: p2264, p2265, p2267, p2268, p2271

Note: For 100%, the actual value is not changed.

p2270 Technology controller actual value function / Tec_ctr ActVal fct

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0	3	0

Description: Setting to use an arithmetic function for the actual value signal of the technology controller.

Value:
0: Output (y) = input (x)
1: Root function (root from x)
2: Square function (x * x)
3: Cube function (x * x * x)

Dependency: Refer to: p2264, p2265, p2267, p2268, p2269, p2271

p2271 Technology controller actual value inversion (sensor type) / Tech_ctrl act inv

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to invert the actual value signal of the technology controller.

The inversion depends on the sensor type for the actual value signal.

Value:
0: No inversion
1: Inversion actual value signal

Caution: If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

Note: The correct setting can be determined as follows:

- inhibit the technology controller (p2200 = 0).

- increase the motor speed and in so doing, measure the actual value signal of the technology controller.

--> If the actual value increases as the motor speed increases, then p2271 should be set to 0 (no inversion).

--> If the actual value decreases as the motor speed increases, then p2271 should be set to 1 (the actual value signal is inverted).

r2272 CO: Technology controller actual value scaled / Tech_ctrl act scal

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the scaled actual value signal of the technology controller.

Dependency: Refer to: p2264, p2265, r2266, p2267, p2268, p2269, p2270, p2271

r2273 CO: Technology controller system deviation / Tec_ctrl sys_dev

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the system deviation between the setpoint and actual value of the technology controller.

Dependency: Refer to: p2263

p2274 Technology controller differentiation time constant / Tec_ctrl D comp T

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	0.000 [s]

Description: Sets the time constant for the differentiation (D component) of the technology controller.

Note: p2274 = 0: Differentiation is disabled.

p2280 Technology controller proportional gain / Tec_ctrl Kp

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0.000	1000.000	1.000

Description: Sets the proportional gain (P component) of the technology controller.

Note: p2280 = 0: The proportional gain is disabled.

p2285 Technology controller integral time / Tec_ctrl Tn

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0.000 [s]	10000.000 [s]	30.000 [s]

Description: Sets the integral time (I component, integrating time constant) of the technology controller.

Notice: The following applies for p2251 = 0:

If the output of the technology controller lies within the range of a suppression (skip) bandwidth (p1091 ... p1094, p1101) or below the minimum speed (p1080), the integral component of the controller is held so that the controller temporarily works as a P controller. This is necessary in order to prevent the controller from behaving in an unstable manner, as the ramp-function generator switches to the parameterized up and down ramps (p1120, p1121) at the same time in order to avoid setpoint steps. This state can be exited or avoided by changing the controller setpoint or by using the start speed (= minimum speed).

Note: When the controller output reaches the limit, the I component of the controller is held.

p2285 = 0:

The integral time is disabled and the I component of the controller is reset.

p2286[0...n]	BI: Hold technology controller integrator / Tec_ctr integ hold		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
	Min	**Max**	**Factory setting**
	-	-	56.13

Description: Sets the signal source to hold the integrator for the technology controller.

p2289[0...n]	CI: Technology controller precontrol signal / Tec_ctr prectr_sig		
	Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
	Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the precontrol signal of the technology controller.

p2290[0...n]	BI: Technology controller limiting enable / Tec_ctrl lim enab		
	Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source to enable the technology controller output.
The technology controller output is enabled with a 1 signal.
The technology controller output is held with a 0 signal.

p2291	CO: Technology controller maximum limiting / Tec_ctrl max_lim		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
	Min	**Max**	**Factory setting**
	-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).

p2292	CO: Technology controller minimum limiting / Tec_ctrl min_lim		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
	Min	**Max**	**Factory setting**
	-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).

p2293 Technology controller ramp-up/ramp-down time / Tec_ctr t_RU/RD

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
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).

r2294 CO: Technology controller output signal / Tec_ctrl outp_sig

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the output signal of the technology controller.

Dependency: Refer to: p2295

p2295 CO: Technology controller output scaling / Tec_ctrl outp scal

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
-100.00 [%]	100.00 [%]	100.00 [%]

Description: Sets the scaling for the output signal of the technology controller.

p2296[0...n] CI: Technology controller output scaling / Tec_ctrl outp scal

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
-	-	2295[0]

Description: Sets the signal source for the scaling value of the technology controller.

Dependency: Refer to: p2295

p2297[0...n] CI: Technology controller maximum limit signal source / Tec_ctrMaxLimS_src

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
-	-	1084[0]

Description: Sets the signal source for the maximum limiting of the technology controller.

Dependency: Refer to: p2291

Note: 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.

p2298[0...n] CI: Technology controller minimum limit signal source / Tec_ctrl min_l s_s

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
-	-	2292[0]

Description: Sets the signal source for the minimum limiting of the technology controller.

Dependency: Refer to: p2292

Note: 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.

p2299[0...n] CI: Technology controller limit offset / Tech_ctrl lim offs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the offset of the output limiting of the technology controller.

p2302 Technology controller output signal starting value / Tec_ctr start val

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0.00 [%]	200.00 [%]	0.00 [%]

Description: 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.

Dependency: 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.

Note: 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.

p2306 Technology controller system deviation inversion / Tec_ctr SysDev inv

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to invert the system deviation of the technology controller.

The setting depends on the type of control loop.

Value:
0: No inversion
1: Inversion

Caution: If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

Note: The correct setting can be determined as follows:
- inhibit the technology controller (p2200 = 0).
- increase the motor speed and in so doing, measure the actual value signal (of the technology controller).
- if the actual value increases with increasing motor speed, then the inversion should be switched out.
- if the actual value decreases with increasing motor speed, then the inversion should be set.

If value = 0:
The drive reduces the output speed when the actual value rises (e.g. for heating fans, intake pump, compressor).
If value = 1:
The drive increases the output speed when the actual value increases (e.g. for cooling fans, discharge pumps).

p2310 CI: Technology controller Kp adaptation input value signal source / Kp adapt inp s_src

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input value of the adaptation of proportional gain Kp for the technology controller.
Dependency: Refer to: p2252, p2311, p2312, p2313, p2314, p2315, r2316

p2311 Technology controller Kp adaptation lower value / Kp adapt lower val

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
0.000	1000.000	1.000

Description: Sets the lower value for the adaptation of proportional gain Kp for the technology controller.
Dependency: Refer to: p2310, p2312, p2313, p2314, p2315, r2316
Caution: The upper value must be set higher than the lower value (p2312 > p2311).
Note: Kp adaptation is activated with p2252.7 = 1.

p2312 Technology controller Kp adaptation upper value / Kp adapt upper val

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
0.000	1000.000	10.000

Description: Sets the upper value for the adaptation of proportional gain Kp for the technology controller.
Dependency: Refer to: p2310, p2311, p2313, p2314, p2315, r2316
Caution: The upper value must be set higher than the lower value (p2312 > p2311).
Note: Kp adaptation is activated with p2252.7 = 1.

p2313 Technology controller Kp adaptation lower starting point / Kp adapt lower pt

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the lower starting point for the adaptation of proportional gain Kp for the technology controller.
Dependency: Refer to: p2310, p2311, p2312, p2314, p2315, r2316

Caution: The upper starting point must be set higher than the lower starting point (p2314 > p2313).

Note: Kp adaptation is activated with p2252.7 = 1.

p2314 Technology controller Kp adaptation upper starting point / Kp adapt upper pt

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	100.00 [%]

Description: Sets the upper activation point for the adaptation of proportional gain Kp for the technology controller.

Dependency: Refer to: p2310, p2311, p2312, p2313, p2315, r2316

Caution: The upper starting point must be set higher than the lower starting point (p2314 > p2313).

Note: Kp adaptation is activated with p2252.7 = 1.

p2315 CI: Technology controller Kp adaptation scaling signal source / Kp adapt scal s_s

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source to scale the results of the adaptation of the proportional gain Kp for the technology controller.

Dependency: Refer to: p2310, p2311, p2312, p2313, p2314, r2316

Note: Kp adaptation is activated with p2252.7 = 1.

r2316 CO: Technology controller, Kp adaptation output / Kp adapt outp

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the output signal of the adaption of proportional gain Kp for the technology controller.

Dependency: Refer to: p2252, p2310, p2311, p2312, p2313, p2314, p2315

p2317 CI: Technology controller Tn adaptation input value signal source / Tn adapt inp s_src

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input value of the adaptation of integral time Tn for the technology controller.

Dependency: Refer to: p2252, p2318, p2319, p2320, p2321, r2322

Note: Tn adaptation is activated with p2252.8 = 1.

p2318 Technology controller Tn adaptation lower value / Tn adapt lower val

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	3.000 [s]

Description: Sets the lower value for the adaptation of integral time Tn for the technology controller.

Dependency: Refer to: p2317, p2319, p2320, p2321, r2322

Caution: The upper value must be set higher than the lower value (p2319 > p2318).

Note: Tn adaptation is activated with p2252.8 = 1.

p2319 Technology controller Tn adaptation upper value / Tn adapt upper val

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	10.000 [s]

Description: Sets the upper value for the adaptation of integral time Tn for the technology controller.

Dependency: Refer to: p2317, p2318, p2320, p2321, r2322

Caution: The upper value must be set higher than the lower value (p2319 > p2318).

Note: Tn adaptation is activated with p2252.8 = 1.

p2320 Technology controller Tn adaptation lower starting point / Tn adapt lower pt

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	0.00 [%]

Description: Sets the lower activation point for the adaptation of integral time Tn for the technology controller.

Dependency: Refer to: p2317, p2318, p2319, p2321, r2322

Caution: The upper starting point must be set higher than the lower starting point (p2321 > p2320).

Note: Tn adaptation is activated with p2252.8 = 1.

p2321 Technology controller Tn adaptation upper starting point / Tn adapt upper pt

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
0.00 [%]	400.00 [%]	100.00 [%]

Description: Sets the upper activation point for the adaptation of integral time Tn for the technology controller.

Dependency: Refer to: p2317, p2318, p2319, p2320, r2322

Caution: The upper starting point must be set higher than the lower starting point (p2321 > p2320).

Note: Tn adaptation is activated with p2252.8 = 1.

r2322 CO: Technology controller Tn adaptation output / Tn adapt output

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7959
Min	**Max**	**Factory setting**
- [s]	- [s]	- [s]

Description: Display and connector output for the output signal of the adaption of integral time Tn for the technology controller.

Dependency: Refer to: p2252, p2317, p2318, p2319, p2320, p2321

Note: Tn adaptation is activated with p2252.8 = 1.

p2339 Techn. controller threshold value f. I comp. hold for skip speed / Tec_ctrl thr_skip

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00 [%]	200.00 [%]	2.00 [%]

Description: Sets the threshold value for the system deviation of the technology controller, which controls holding the controller integral component in the range of the skip speeds of the ramp-function generator.

Recommendation: To avoid speed setpoint steps in the range of the skip speeds, we recommend setting p2252 bit 4 = 1 (ramp-function generator bypass deactivated).

Dependency: The parameter has no effect for p2252 bit 5 = 1 (integrator hold deactivated).

Refer to: r2273

Note: Only p2251 = 0:

If the output signal of the technology controller reaches a skip band in the speed setpoint channel, then the integral component of the controller is held, if at the same time, the system deviation is lower than the threshold value set here. By holding the integral component, it can be avoided that the controller oscillates in the range of the skip bands.

r2344 CO: Technology controller last speed setpoint (smoothed) / Tec_ctrl n_setp_sm

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the smoothed speed setpoint of the technology controller prior to switching to operation with fault response (see p2345).

Dependency: Refer to: p2345

Note: Smoothing time = 10 s

p2345 Technology controller fault response / Tech_ctrl flt resp

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
0	2	0

Description: 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.

Value:
0: Function inhibited
1: On fault: Changeover to r2344 (or p2302)
2: On fault: Changeover to p2215

Dependency: The parameterized fault response is only effective if the technology controller mode is set to p2251 = 0 (technology controller as main setpoint).

Refer to: p2267, p2268, r2344

Refer to: F07426

Notice: Dependent upon the application, the changing over of the setpoint when fault F07426 occurs can lead to the fault condition disappearing and the re-activation of the technology controller. This can repeat itself and cause limit oscillations. In this case, a different fault response or a different fixed setpoint 15 for the fault response p2345 = 2 should be selected.

Note: The parameterized fault response can only be achieved if the default fault response of the technology controller fault F07426 is set to "NONE" (see p2100, p2101). If a fault response other than "NONE" is entered in p2101 for F07426, p2345 must be set to zero.

If the fault occurs during ramping up to the starting setpoint p2302, this starting setpoint is retained as the final value (there is no changeover to the fault response setpoint).

r2349.0...13 CO/BO: Technology controller status word / Tec_ctrl status

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7958
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the technology controller.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Technology controller deactivated	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	-
07	Technology controller output negative	Yes	No	-
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	-
13	Technology controller limiting enable	Yes	No	-

Note: While the technology controller is enabled, the following applies:

When switching off with OFF1, OFF3 and for pulse inhibit, bits 10 and 11 are simultaneously set to 1 as the controller output is defined by the internal limiting.

p2350 Enable PID autotuning / PID autotuning

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4	0

Description: Activates the function to automatically tune the PID controller.

Value:
0: PID autotuning deactivated
1: PID autotuning with ZN technique
2: As 1 with low overshoot

3: As 2 + low or no overshoot
4: PID autotuning, only PI

Dependency: Active if the PID controller is enabled (see P2200).

Note: P2350 = 1

This is the Ziegler-Nichols standard tuning (ZN tuning). In this case, it should involve a response to a step.

P2350 = 2

For this tuning, a low overshoot is obtained (O/S). However, it should be faster than option 1.

P2350 = 3

For this tuning, a low or no overshoot is obtained. However, it is not as fast as option 2.

P2350 = 4

For this tuning, only values P and I are changed, and it should involve a dampened response.

Which option should be selected depends on the particular application. It can be generally stated that option 1 manifests a good response. However, if a faster response is required, then option 2 should be selected.

If no overshoot is desirable, then option 3 should be the preferred choice.

Option 4 should be selected for cases in which no D component is required.

The tuning technique is identical for all options.

Only the P, I and D values are calculated differently.

This parameter is set to zero after automatic tuning has been completed.

p2354 PID autotuning monitoring time / PID tuning t_monit

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
60 [s]	65000 [s]	240 [s]

Description: Sets the monitoring time for the PID autotuning

This time is started after activating PID autotuning (p2350). If, within this time, the control loop is not excited, then the automatic setting is canceled and an appropriate fault is output.

Dependency: Refer to: p2350

Refer to: F07445

p2355 PID autotuning offset / PID autotun.offset

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [%]	20 [%]	5 [%]

Description: This parameter is used to set the excitation type of the PID control loop to be used.

p2370[0...n] Closed-loop cascade control enable / Csc_ctrl enab

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the signal source to switch in/switch out the closed-loop cascade control function.

1 signal: The function is switched in.

Value:
0: Closed-loop cascade control inhibited
1: Closed-loop cascade control enabled

Note: The technology controller must be activated (p2200) and configured (p2251 = 0) in order to use the function.

Negative speed setpoints should be excluded.

p2371 Closed-loop cascade control configuration / Csc_ctrl config

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	8	0

Description: Parameter for configuring the connection and disconnection of external motors to and from the line voltage.

Connecting external motors to the line voltage enables up to three additional drives to be controlled by the technology controller in addition to the main drive. The complete system, therefore, comprises one closed-loop-controlled main drive and up to three other drives, which can be controlled via contactors or motor starters. The contactors or motor starters are switched by the converter's digital outputs (see also r2379).

Switching-in motor:

If the main drive is operated at maximum speed and the deviation at the technology controller input increases further, the control will in addition connect external motors M1 through M3 to the line voltage. At the same time, the main drive is ramped down to the closed-loop cascade control switch-in/switch-out speed (p2378) via the down ramp, so that the total output power can be kept as constant as possible. During this time the technology controller is switched off.

Switching-off the motor:

If the main drive is operated at minimum speed and the deviation at the technology controller input decreases further, the control will disconnect external motors M1 through M3 from the line voltage. At the same time, the main drive is ramped up to the closed-loop cascade control switch-in/switch-out speed (p2378) via the up ramp, so that the total output power can be kept as constant as possible.

Value:
0: Closed-loop cascade control inhibited
1: M1 = 1X
2: M1 = 1X, M2 = 1X
3: M1 = 1X, M2 = 2X
4: M1 = 1X, M2 = 1X, M3 = 1X
5: M1 = 1X, M2 = 1X, M3 = 2X
6: M1 = 1X, M2 = 2X, M3 = 2X
7: M1 = 1X, M2 = 1X, M3 = 3X
8: M1 = 1X, M2 = 2X, M3 = 3X

Dependency: Refer to: p2372

Note: Selecting 2X means that a motor is switched in with twice the power (as opposed to 1X, which equates to the motor power at the converter).

p2372 Closed-loop cascade control mode motor selection / Csc_ctrl mode

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	3	0

Description: Parameter for selecting the control mode for switching-in and switching-out external motors.

Selection 2 and 3 support selection options for automatically interchanging the motors, which are connected to the line supply.

Value:
0: Fixed sequence
1: Closed-loop cascade control after absolute operating hours
2: Automatic replacement after continuous operating hours
3: Automatic replacement after absolute operating hours

Note: For p2372 = 0:

Motor selection for switching-in/switching-out follows a fixed sequence and is dependent on the closed-loop cascade control configuration (p2371).

For p2372 = 1:

Motor selection for switching-in/switching-out is derived from the operating hours counter p2380. When switching-in, the motor with the least operating hours is connected. When switching-out, the motor with the most operating hours is disconnected.

For p2372 = 2:

Motor selection for switching-in/switching-out is derived from the operating hours counter p2380. When switching-in, the motor with the least operating hours is connected. When switching-out, the motor with the most operating hours is disconnected.

In addition, those motors which have been in operation continuously for longer than the time set in p2381 are interchanged automatically.

If p2371 = 4 (selection of three identical motors), the switch is only performed between two motors, if the required input power of one single external motor is sufficient for the actual operating point.

For p2372 = 3:

Motor selection for switching-in/switching-out is derived from the operating hours counter p2380. When switching-in, the motor with the least operating hours is connected. When switching-out, the motor with the most operating hours is disconnected.

In addition, those motors which have been in operation for a total time longer than that set in p2382 are interchanged automatically.

For p2372 = 2, 3:

This automatic interchange (autochange) is only possible if the designated motor is not in operation. If all motors are in operation, the interchange will not be possible and alarm A07427 appears.

Autochange mode is only possible if p2371 = 2, 4 (motors of the same size).

p2373 Closed-loop cascade control switch-in threshold / Csc_ctrl sw-in thr

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	20.0 [%]

Description: Threshold value for the delayed switching-in or non-delayed switching-out of external motors connected to the line. Motor switching-in is activated if the maximum speed is reached and the wait time in p2374 has expired.

Dependency: Refer to: p2374

p2374 Closed-loop cascade control switch-in delay / Csc_ctrl t_in_del

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [s]	650 [s]	30 [s]

Description: Additional delay time for connecting external motors to the line voltage after the system deviation of the technology controller has exceeded the threshold value p2373 and the motor has reached the maximum speed.

Dependency: Refer to: p2373

Note: If the deviation at the technology controller input exceeds the overcontrol threshold p2376, the delay time is bypassed.

p2375 Closed-loop cascade control switch-out delay / Csc_ctrl t_out_del

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [s]	650 [s]	30 [s]

Description: Additional delay time for the disconnection of external motors from the line after the system deviation of the technology controller has exceeded the threshold p2373 and the motor has reached the minimum speed p1080.

Dependency: Refer to: p2373, p2376

Note: If the deviation at the technology controller input exceeds the overcontrol threshold -p2376, the delay time is bypassed.

p2376 Closed-loop cascade control overcontrol threshold / Csc_ctr ovctr_thr

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [%]	200.0 [%]	25.0 [%]

Description: Threshold value for instantaneous switching-in or switching-out external motors.

Note: If the maximum speed is reached and the deviation at the technology controller input exceeds the overcontrol threshold p2376 at the same time, the delay time p2374 is bypassed and the motor is immediately switched-in (connected).

If the minimum speed is reached and the deviation at the technology controller input exceeds the overcontrol threshold -p2376 at the same time, the delay time p2375 is bypassed and the motor is immediately switched-out (disconnected).

p2377 Closed-loop cascade control interlocking time / Csc_ctrl t_interl

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0 [s]	650 [s]	0 [s]

Description: Interlocking time during which, following the connection or disconnection of an external motor, no further motors are connected or disconnected using the closed-loop cascade control. This avoids duplicate switching operations.

p2378 Closed-loop cascade control switch-in/switch-out speed / Csc_ctrl n_in/out

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [%]	100.0 [%]	50.0 [%]

Description: Sets the speed for the main drive, which is approached directly after an external motor has been connected or disconnected.

The parameter value refers to the maximum speed (p1082).

r2379.0...7 CO/BO: Closed-loop cascade control status word / Csc_ctrl ZSW

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word of the closed-loop cascade control

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Start external motor 1	Yes	No	-
01	Start external motor 2	Yes	No	-
02	Start external motor 3	Yes	No	-
03	Switch-in motor	Yes	No	-
04	Switch-in/switch-out active	Yes	No	-
05	All motors active	Yes	No	-
06	Automatic replacement not possible	Yes	No	-
07	Alarm active	Yes	No	-

p2380[0...2] Closed-loop cascade control operating hours / Csc_ctrl op_hrs

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [h]	340.28235E36 [h]	0.0 [h]

Description: Displays the operating hours for the external motors.

The display can only be reset to zero.

Index:
[0] = Motor 1
[1] = Motor 2
[2] = Motor 3

p2381 Closed-loop cascade control max time for continuous operation / Csc_ctrl t_max

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.1 [h]	100000.0 [h]	24.0 [h]

Description: Time limit for the continuous operation of external motors.

Continuous operation is measured starting from when a motor is connected to the line voltage. It ends when a motor is disconnected from the line.

p2382 Closed-loop cascade control operating time limit / Csc_ctrl t_max op

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.1 [h]	100000.0 [h]	24.0 [h]

Description: Limit for the total operating time of external motors.

The total operating time of an external motor increases every time it is switched in.

p2383 Closed-loop cascade control switch-out sequence / Csc_ctr sw-out seq

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	1	0

Description: Selection of the response used to stop the motors when the OFF command is sent.

For p2383 = 1:

OFF1 disconnects the external motors from the line in the order 3 - 2 - 1. The time set in p2387 is applied as a delay time between the disconnection of each motor. The main motor is only switched off if all the external motors have already been switched off.

In the case of OFF2 and OFF3, the external motors and the main motor are switched off immediately with the OFF command (same behavior as with p2383 = 0).

Value:
0: Normal stop
1: Sequential stop

Caution: ⚠ If p2383 = 1 and the OFF1 command is pending, the main motor will not be stopped until all external motors have been disconnected and time p2387 has elapsed. By switching off the external motors the main motor can be accelerated again.

p2384 Closed-loop cascade control motor switch-on delay / Csc_ctr t_del_on

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	999.000 [s]	0.000 [s]

Description: Delay time once the switch-in conditions have been met until the external motor is switched on.

The activation of the corresponding status bit (r2379) for controlling the contactors or the motor starter is delayed by this time, while the main motor speed already decreases down to the switch-in speed (p2378).

p2385 Closed-loop cascade control holding time switch-in speed / Csc_ctr t_hld n_in

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	999.000 [s]	0.000 [s]

Description: Time during which the switch-in speed (see p2378) of the main motor is maintained after an external motor has been switched-in and the main motor has been decelerated to the switch-in speed.

p2386 Closed-loop cascade control motor switch-off delay / Csc_ctrl t_del_off

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	999.000 [s]	0.000 [s]

Description: Delay time once the switch-out conditions have been met until the external motor is switched off.

The resetting of the corresponding status bit (r2379) for controlling the contactors or the motor starter is delayed by this time, while the main motor ramps up to the switch-out speed (p2378).

p2387 Closed-loop cascade control holding time switch-out speed / CscCtr t_hld n_out

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.000 [s]	999.000 [s]	0.000 [s]

Description: Time during which the switch-out speed (see p2378) of the main motor is maintained after an external motor has been switched-out and the main motor has been accelerated to the switch-out speed.

p2390[0...n] Speed start of hibernation mode / Hib mode n_start

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 7038
Min	**Max**	**Factory setting**
0.000 [rpm]	21000.000 [rpm]	0.000 [rpm]

Description: Sets the speed for the start of the "hibernation mode" function.

The total speed of this activation threshold is the sum of the minimum speed p1080 and p2390.

If the speed setpoint undershoots this start speed, the delay time in p2391 is started. If the restart threshold is no longer reached before the delay time expires, the hibernation mode boost speed p2395 is impressed for the time period p2394 and then the motor is brought to a standstill via the down ramp of the setpoint channel. The drive is switched off (hibernation mode active). The drive is automatically switched on again as soon as the speed setpoint exceeds the restart threshold.

Note: The speed at which the hibernation mode is started is set to 4 % of the nominal speed when commissioning is completed.

p2391[0...n] **Hibernation mode delay time / Hib mode t_delay**

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 7038
Min	**Max**	**Factory setting**
0 [s]	3599 [s]	120 [s]

Description: Sets the delay time for the "hibernation mode" function.

To ensure that the drive can be shut down (pulse inhibit), a restart condition must not occur during this time.

Dependency: Refer to: p2390, p2392, p2393

p2392 **Hibernation mode restart value with technology controller / Hib start w/ tec**

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: 9_1	**Unit selection:** p0595	**Func. diagram:** 7038
Min	**Max**	**Factory setting**
0.000 [%]	200.000 [%]	0.000 [%]

Description: Sets the motor restart time with the "Hibernation mode" function.

If the hibernation mode function is active, the technology controller continues to operate and supplies a speed setpoint to the setpoint channel. Since the drive is deactivated, there is no system deviation at the input of the technology controller. As soon as this exceeds the restart value p2392, the drive is automatically switched on and the speed is controlled to 1.05 * (p1080 + p2390) via the up ramp of the setpoint channel.

Note: The restart value is set to 5 % when commissioning is completed.

p2393[0...n] **Hibernation mode restart speed relative w/o techn controller / Hib start w/o tec**

Access level: 3	**Calculated:** p0340 = 1,3,5	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 7038
Min	**Max**	**Factory setting**
0.000 [rpm]	21000.000 [rpm]	0.000 [rpm]

Description: Sets the starting speed to restart the motor for the "hibernation mode" function.

When the hibernation mode is active, a speed setpoint is still supplied to the setpoint channel. If the setpoint increases again and in so doing exceeds the restart speed, the drive is automatically switched on and the speed setpoint is controlled to p1080 + p2390 + p2393 via the up ramp of the setpoint channel.

The restart speed is the sum of the minimum speed p1080, the hibernation start speed p2390 and the relative restart speed p2393.

Dependency: Refer to: p1080

Note: The parameter is set to 6 % of the nominal speed when commissioning is exited.

p2394[0...n] **Hibernation mode boost time period / Hib mode t_boost**

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 7038
Min	**Max**	**Factory setting**
0 [s]	3599 [s]	0 [s]

Description: Sets the boost time period for the "hibernation mode" function.

Before the drive is finally switched off (hibernation mode), the setpoint speed is moved to the boost speed p2395 for the time set in p2394. Depending on the application, this allows the hibernation intervals to be extended (in time).

Caution: The controller is not operational while the boost speed is being impressed. As a result, for example, for pump applications, it must be ensured that the tank does not overflow as a result of the additional boost. For compressors, it must be ensured that the boost speed does not result in an overpressure condition.

Note: For p2394 = 0 s, the following applies:

The boost speed is not used.

p2395[0...n] Hibernation mode boost speed / Hib mode n_boost

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2000	**Dyn. index:** DDS, p0180
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 7038
Min	**Max**	**Factory setting**
0.000 [rpm]	21000.000 [rpm]	0.000 [rpm]

Description: Sets the boost speed for the "hibernation mode" function.

The motor is accelerated to the hibernation mode boost speed p2395 for the hibernation mode boost time period p2394 before it is brought to a standstill via the down ramp of the setpoint channel (p1121) and subsequently switched off (pulse inhibit).

Dependency: Refer to: p2394

Caution: The controller is not operational while the boost speed is being impressed. As a result, for example, for pump applications, it must be ensured that the tank does not overflow as a result of the additional boost. For compressors, it must be ensured that the boost speed does not result in an overpressure condition.

p2396[0...n] Hibernation mode max. shutdown time / Hib t_off max

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 7038
Min	**Max**	**Factory setting**
0 [s]	863999 [s]	0 [s]

Description: Sets the maximum shutdown time for the "Hibernation mode" function.

If the drive is in the hibernation mode (pulse inhibit) then it is switched on again at the latest after the maximum switch-off time has expired. If the restart conditions are fulfilled earlier, then the drive is correspondingly switched on earlier.

Danger: The drive automatically powers itself up at the latest after the maximum switch-off time has expired.

Caution: Once the maximum shutdown time has expired, the drive switches itself on automatically and accelerates to the start speed. The technology controller only becomes effective again when this speed is reached (for p2398 = 1).

Depending on the application, for instance for pumps, it should be ensured that as a result of cyclic starts the tank does not overflow or for compressors, an overpressure condition does not occur.

Note: Automatic restart once the maximum OFF time has elapsed is deactivated by setting p2396 = 0 s.

r2397[0...1] CO: Hibernation mode output speed actual / Hib n_outp act

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** 7038
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: Display and connector output for the actual output speed for the "hibernation mode" function.

Note: Zero is displayed if the boost or starting speed is not active.

p2398 Hibernation mode operating type / Hib mode op_type

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7038
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the operating mode for the "Hibernation mode" function.

Value:
0: Hibernation mode inhibited
1: Hibernation mode activated

Dependency: Refer to: p2200, p2251

Refer to: A07325

Caution: When the "hibernation mode" function is active, the motor can start again automatically.

Note: When the "hibernation mode" function (p2398 = 1) is activated, its behavior is defined as to whether the technology controller is additionally switched in (closed-loop) or switched out (open-loop).

The technology controller is enabled via binector input p2200 and its mode is set in p2251.

p2200 = 0, p2251 = 0:

Hibernation mode operates without technology controller (open-loop)

p2200 = 1, p2251 = 0:

Hibernation mode operates with technology controller (closed-loop)

r2399.0...8 CO/BO: Hibernation mode status words / Hib ZSW

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7038
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the "hibernation mode" function.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Hibernation mode enabled (p2398 <> 0)	Yes	No	-
01	Hibernation mode active	Yes	No	-
02	Hibernation mode delay active	Yes	No	-
03	Hibernation boost active	Yes	No	-
04	Hibernation mode motor switched off	Yes	No	-
05	Hibernation mode switched off cyclic restart active	Yes	No	-
06	Hibernation motor motor restarts	Yes	No	-
07	Hibernation mode supplies total setpoint for ramp-fct generator	Yes	No	-
08	Hibernation mode bypasses ramp-fct generator in setpoint channel	Yes	No	-

Dependency: Refer to: p2398

Refer to: A07325

p2900[0...n] CO: Fixed value 1 [%] / Fixed value 1 [%]

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 1021
Min	**Max**	**Factory setting**
-10000.00 [%]	10000.00 [%]	0.00 [%]

Description: Setting and connector output for a fixed percentage value.

Dependency: Refer to: p2901, r2902, p2930

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can be used to interconnect a scaling function (e.g. scaling the main setpoint).

p2901[0...n] CO: Fixed value 2 [%] / Fixed value 2 [%]

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 1021
Min	**Max**	**Factory setting**
-10000.00 [%]	10000.00 [%]	0.00 [%]

Description: Setting and connector output for a fixed percentage value.

Dependency: Refer to: p2900, p2930

Notice: A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

Note: The value can be used to interconnect a scaling function (e.g. scaling of the supplementary setpoint)

r2902[0...14] CO: Fixed values [%] / Fixed values [%]

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 1021
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for frequently used percentage values.

Index:
[0] = Fixed value +0 %
[1] = Fixed value +5 %
[2] = Fixed value +10 %
[3] = Fixed value +20 %
[4] = Fixed value +50 %
[5] = Fixed value +100 %
[6] = Fixed value +150 %
[7] = Fixed value +200 %
[8] = Fixed value -5 %
[9] = Fixed value -10 %
[10] = Fixed value -20 %
[11] = Fixed value -50 %
[12] = Fixed value -100 %
[13] = Fixed value -150 %
[14] = Fixed value -200 %

Dependency: Refer to: p2900, p2901, p2930

Note: The signal sources can, for example, be used to interconnect scalings.

p2930[0...n] CO: Fixed value M [Nm] / Fixed value M [Nm]

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** p2003	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 1021
Min	**Max**	**Factory setting**
-100000.00 [Nm]	100000.00 [Nm]	0.00 [Nm]

Description: Setting and connector output for a fixed torque value.

Dependency: 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.

r2969[0...6] Flux model value display / Psi_mod val displ

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the values of the direct access flux model for the synchronous reluctance motor (RESM) for diagnostic purposes.

Valid values are only displayed when the pulses are inhibited.

For index 0:

Displays the entered direct axis current id in Arms:

For index 1, 2, 3:

Displays the saturation curves of the direct axis flux psid(id, iq):

- r2969[1]: flux in Vsrms with respect to the direct axis current for iq = 0
- r2969[2]: flux in Vsrms with respect to the direct axis current for iq = 0.5* p2950
- r2969[3]: flux in Vsrms with respect to the direct axis current for iq = p2950

For index 4, 5, 6:
Displays the relative error of the current inversion (id(psid, iq) - id) / p2950:
- r2969[4]: error with respect to direct axis current for iq = 0
- r2969[5]: error with respect to direct axis current for iq = 0.5 * p2950
- r2969[6]: 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: RESM: reluctance synchronous motor (synchronous reluctance motor)

p3110 External fault 3 switch-on delay / Ext fault 3 t_on

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2546
Min	**Max**	**Factory setting**
0 [ms]	1000 [ms]	0 [ms]

Description: Sets the delay time for external fault 3.

Dependency: Refer to: p2108, p3111, p3112
Refer to: F07862

p3111[0...n] BI: External fault 3 enable / Ext fault 3 enab

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for the enable signal of external fault 3.
External fault 3 is initiated by the following AND logic operation:
- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p2108, p3110, p3112
Refer to: F07862

p3112[0...n] BI: External fault 3 enable negated / Ext flt 3 enab neg

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

Description: Sets the signal source for the negated enable signal of external fault 3.
External fault 3 is initiated by the following AND logic operation:
- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

Dependency: Refer to: p2108, p3110, p3111
Refer to: F07862

r3113.0...15 CO/BO: NAMUR message bit bar / NAMUR bit bar

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status of the NAMUR message bit bar.

The faults and alarms are assigned to the appropriate signaling/message classes and influence a specific message bit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Note: For bit 00:

Hardware or software malfunction was identified. Carry out a POWER ON of the component involved. If it occurs again, contact Technical Support.

For bit 01:

A line supply fault has occurred (phase failure, voltage level, ...). Check the line supply / fuses. Check the supply voltage. Check the wiring.

For 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.

For 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).

For bit 04:

The temperature in the component has exceeded the highest permissible limit. Check the ambient temperature / control cabinet cooling.

For bit 05:

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.

For 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.

For 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.

For bit 08:

A safety operation monitoring function (Safety) has detected an error.

For 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.

For 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.

For 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.

For bit 15:

Group fault. Determine the precise cause of the fault using the commissioning tool.

p3117 Change safety message type / Ch. SI mess type

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

r3120[0...63] Component fault / Comp fault

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8060
Min	**Max**	**Factory setting**
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.

r3121[0...63] Component alarm / Comp alarm

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8065
Min	**Max**	**Factory setting**
0	3	-

Description: Displays the component of the alarm which has occurred.

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

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8060
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the diagnostic attribute of the fault which has occurred.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Hardware replacement recommended	Yes	No	-
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.

For 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

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 20: auxiliary unit faulted

r3123[0...63] **Diagnostic attribute alarm / Diag_attr alarm**

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8065
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the diagnostic attribute of the alarm which has occurred.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Hardware replacement recommended	Yes	No	-
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	-

Dependency: Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2145, r2146, r3121

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

The structure of the alarm buffer and the assignment of the indices is shown in r2122.

For 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.

For 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

Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 --> PROFIdrive message class 20: auxiliary unit faulted

r3131 CO: Actual fault value / Act fault val

Access level: 3	**Calculated:** -	**Data type:** Integer32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8060
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the fault value of the oldest active fault.

Dependency: Refer to: r2131, r3132

r3132 CO: Actual component number / Comp_no act

Access level: 3	**Calculated:** -	**Data type:** Integer32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8060
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the component number of the oldest fault that is still active.

Dependency: Refer to: r2131, r3131

p3230[0...n] CI: Load monitoring speed actual value / Load monit n_act

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 8012, 8013
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the speed actual value of the load monitoring.

Dependency: Refer to: r2169, p2181, p2192, p2193, p3231

Refer to: A07920, A07921, A07922, F07923, F07924, F07925

Note: The parameter is only effective for p2193 = 2.

p3231[0...n] Load monitoring speed deviation / Load monit n_dev

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit 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 permissible speed deviation during load monitoring (for p2193 = 2).

Dependency: Refer to: r2169, p2181, p2193, p3230

Refer to: A07920, A07921, A07922, F07923, F07924, F07925

p3232[0...n] BI: Load monitoring failure detection / Load_moni fail_det

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 8013
Min	**Max**	**Factory setting**
-	-	1

Description: Sets the signal source for detecting a failure.

Dependency: Refer to: p2192, p2193

Refer to: F07936

Note: Monitoring is triggered with a 0 signal, as soon as the time in p2192 has expired.

p3233[0...n]	Torque actual value filter time constant / M_act_filt T		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 8013
	Min	**Max**	**Factory setting**
	0 [ms]	1000000 [ms]	100 [ms]

Description: Sets the time constant for the PT1 element to smooth the torque actual value.

The smoothed torque actual value is compared with the threshold values and is only used for messages and signals.

p3235	Phase failure signal motor monitoring time / Ph_fail t_monit		
	Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0 [ms]	2000 [ms]	320 [ms]

Description: Sets the monitoring time for phase failure detection of the motor.

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

Note: For p3235 = 0 the function is deactivated.

The monitoring is automatically deactivated during a flying restart for a motor that is still rotating.

3-phase phase failures cannot be detected and are indicated by other messages (e.g. F07902).

r3313	Efficiency optimization 2 optimum flux / Optimum flux		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** r2004	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6722, 6837
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]

Description: Displays the calculated, optimum flux.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1401, p3315, p3316

Note: The function is activated via p1401.14 = 1.

p3315[0...n]	Efficiency optimization 2 minimum flux limit value / Min flux lim val		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6722, 6837
	Min	**Max**	**Factory setting**
	10.0 [%]	200.0 [%]	50.0 [%]

Description: Sets the minimal limit value for the calculated optimum flux.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1401, r3313, p3316

Note: The function is activated via p1401.14 = 1.

p3316[0...n] Efficiency optimization 2 maximum flux limit value / Max flux lim val

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6722, 6837
Min	**Max**	**Factory setting**
10.0 [%]	200.0 [%]	110.0 [%]

Description: Sets the maximum limit value for the calculated optimum flux.

Dependency: Not visible with application class: "Standard Drive Control" (SDC, p0096 = 1)

Refer to: p1401, r3313, p3315

Note: The function is activated via p1401.14 = 1.

p3320[0...n] Fluid flow machine power point 1 / Fluid_mach P1

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit 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 power (P) of point 1 as a [%].

The characteristic comprises the following value pairs:

Power (P) / speed (n)

p3320 / p3321 --> point 1 (P1 / n1)

p3322 / p3323 --> point 2 (P2 / n2)

p3324 / p3325 --> point 3 (P3 / n3)

p3326 / p3327 --> point 4 (P4 / n4)

p3328 / p3329 --> point 5 (P5 / n5)

Dependency: Refer to: r0041, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3321[0...n] Fluid flow machine speed point 1 / Fluid_mach n1

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00	100.00	0.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.

This parameter specifies the speed (n) of point 1 as a [%].

The characteristic comprises the following value pairs:

Power (P) / speed (n)

p3320 / p3321 --> point 1 (P1 / n1)

p3322 / p3323 --> point 2 (P2 / n2)

p3324 / p3325 --> point 3 (P3 / n3)

p3326 / p3327 --> point 4 (P4 / n4)

p3328 / p3329 --> point 5 (P5 / n5)

Dependency: Refer to: r0041, p3320, p3322, p3323, p3324, p3325, p3326, p3327, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3322[0...n] Fluid flow machine power point 2 / Fluid_mach P2

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit 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.

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
Unit 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.

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
Unit 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.

p3325[0...n] Fluid flow machine speed point 3 / Fluid_mach n3

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit 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 speed (n) of point 3 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3326, p3327, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3326[0...n] Fluid flow machine power point 4 / Fluid_mach P4

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00	100.00	92.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.

This parameter specifies the power (P) of point 4 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3327, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3327[0...n] Fluid flow machine speed point 4 / Fluid_mach n4

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00	100.00	75.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.

This parameter specifies the speed (n) of point 4 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3328, p3329

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3328[0...n] Fluid flow machine power point 5 / Fluid_mach P5

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00	100.00	100.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.

This parameter specifies the power (P) of point 5 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3329

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3329[0...n] Fluid flow machine speed point 5 / Fluid_mach n5

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.00	100.00	100.00

Description: For the energy-saving display of a fluid-flow machine, a typical flow characteristic P = f(n) with 5 points along the characteristic is required.

This parameter specifies the speed (n) of point 5 as a [%].

Dependency: Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3328

Note: The reference value for power and speed is the rated power/rated speed.

The energy saved is displayed in r0041.

p3330[0...n] BI: 2/3 wire control command 1 / 2/3 wire cmd 1

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2272, 2273
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for command 1 for the two-wire control/three-wire control.

Dependency: Refer to: p0015, p3331, p3332, r3333, p3334

Note: The mode of operation of this binector input is dependent on the wire control set in p0015.

p3331[0...n] BI: 2/3 wire control command 2 / 2/3 wire cmd 2

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2272, 2273
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for command 2 for the two-wire control/three-wire control.

Dependency: Refer to: p0015, p3330, p3332, r3333, p3334

Note: The mode of operation of this binector input is dependent on the wire control set in p0015.

p3332[0...n] BI: 2/3 wire control command 3 / 2/3 wire cmd 3

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** CDS, p0170
Unit group: -	**Unit selection:** -	**Func. diagram:** 2273
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for command 3 for the two-wire control/three-wire control.

Dependency: Refer to: p0015, p3330, p3331, r3333, p3334

Note: The mode of operation of this binector input is dependent on the wire control set in p0015.

r3333.0...3 CO/BO: 2/3 wire control control word / 2/3 wire STW

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2272, 2273
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the control word for the two wire control/three wire control.
The control signals are dependent on the wire control set in p0015 and the signal states at the digital inputs.

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

p3334	2/3 wire control selection / 2/3 wire select		
	Access level: 4	**Calculated:** -	**Data type:** Integer16
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2272, 2273
	Min	**Max**	**Factory setting**
	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.

p3340[0...n]	BI: Limit switch start / Lim switch start		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the start of motion dependent on the sign of the setpoint.

Dependency: Refer to: p3342, p3343, r3344

Refer to: A07352

p3342[0...n]	BI: Limit switch plus / Lim switch plus		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for the limit switch plus.

BI: p3342 = 1-signal:

Limit switch is inactive.

BI: p3342 = 0 signal:

Limit switch is active.

Dependency: Refer to: p3340, p3343, r3344

Note: For p1113 = 0, the drive traverses with a positive speed setpoint towards the positive limit switch – or for p1113 = 1 with a negative speed setpoint.

p3343[0...n]	BI: Limit switch minus / Lim switch minus		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** CDS, p0170
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	1

Description: Sets the signal source for the limit switch minus.

BI: p3343 = 1-signal:

Limit switch is inactive.

BI: p3343 = 0 signal:

Limit switch is active.

Dependency: Refer to: p3340, p3342, r3344

Note: For p1113 = 0, the drive traverses with a negative speed setpoint towards the minus limit switch – or for p1113 = 1 with a positive speed setpoint.

r3344.0...5 CO/BO: Limit switch status word / Lim sw ZSW

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the limit switch.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Limit switch ON/OFF1	Yes	No	-
01	Limit switch OFF3	No	Yes	-
02	Limit switch axis stationary (standstill)	Yes	No	-
04	Plus limit switch reached	Yes	No	-
05	Minus limit switch reached	Yes	No	-

Dependency: Refer to: p3340, p3342, p3343

Note: For bit 00 = 1:

The limit switch enables motion.

For example, this bit can be used for interconnection with binector input p0840 (ON/OFF1).

For bit 01 = 0:

The drive cannot be moved as a result of the limit switch function (e.g. as a result of the switching on inhibited).

For example, this bit can be used for interconnection with binector input p0848 (OFF3).

For bit 02 = 1:

The axis is at zero speed.

For bit 04 = 1:

The plus limit switch reached.

For bit 05 = 1:

The minus limit switch reached.

p3380 Forming activation/duration / Form act/duration

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.0 [h]	10.0 [h]	0.0 [h]

Description: Setting to activate the "DC link capacitor forming" function.

This value also defines the forming duration.

The function is deactivated with p3380 = 0.

Recommendation: Recommended forming duration depending on the storage time:

1 - 2 years: p3380 = 1 hour

2 - 3 years: p3380 = 2 hours

>3 years: p3380 = 8 hours

Dependency: The "DC link capacitor forming" function can only be executed when commissioning the power unit (p0010 = 2). The function is automatically deactivated (p3380 = 0) once commissioning has been exited (p0010 = 0).

Procedure when forming:

1. Activate power unit commissioning (p0010 = 2).
2. Activate forming (p3380 > 0, value, see recommendation).
3. Switch on the drive unit (p0840 = 0/1 signal).
4. Wait for forming to be completed (r3381 = 0).
5. Exit power unit commissioning (p0010 = 0).

Refer to: r3381, r3382

Refer to: F07390, A07391

Notice: If drive units are not commissioned within 2 years after their original manufacture, then the DC link capacitors must be reformed before use. If this is not done, then the units could be damaged in operation.

Note: The "DC link capacitor forming" function can only be activated online in the drive unit.

If switched off while forming is active, the remaining time (r3381) is lost, and forming must be repeated for the full forming time. If the forming duration is changed, then forming starts again from the beginning.

r3381 Forming remaining time / Forming t_remain

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [h]	- [h]	- [h]

Description: Displays the remaining time after activating the "DC link capacitor forming" function.

Dependency: Refer to: p3380, r3382

r3382 Forming status word / Forming ZSW

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word of the "DC link capacitor forming" function.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Forming activated	Yes	No	-
01	Forming active	Yes	No	-
02	Forming completed	Yes	No	-
03	Forming fault	Yes	No	-

Dependency: Refer to: p3380, r3381

Refer to: F07390, A07391

Note: For bit 00 = 1:

The parameter for activation/duration has been set (p3380 > 0) - however, forming has still not been started (p0840 = 0 signal).

For bit 01 = 1:

The parameter for activation/duration has been set (p3380 > 0) - however, forming has still not been started (p0840 = 0/1 signal).

This status is displayed through alarm A07391.

The procedure can be interrupted via binector input p0840, p0844, p0848 (r3382.1 = 0) - and reactivated again using p0840.

For bit 03 = 1:

Forming was not able to be successfully performed within the set duration.

This status is displayed using fault F07390.

p3855[0...n] DC quantity controller configuration / Rect_ctrl config

PM230	**Access level:** 3	**Calculated:** p0340 = 1,3,5	**Data type:** Unsigned32
PM240	**Can be changed:** U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6797, 6844, 6855
	Min	**Max**	**Factory setting**
	-	-	0111 bin

Description: Sets the configuration for the DC quantity controller in the overmodulation range.

There is no DC quantity control for power units that can also be connected through 1 phase to the line supply (r0204.15 = 1).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DC quantity controller on	Yes	No	-
01	Bandwidth increased	Yes	No	-
02	7th harmonic reduced	Yes	No	-
03	Filter active	Yes	No	-

Dependency: The modulator mode p1802 must enable operation in the overmodulation range. In addition, the overmodulation limit p1803 must be greater than 103 %.

Set the modulator mode p1802 = 10, if the DC quantity control is deactivated and overmodulation is to be prevented.

Notice: Motor identification must be carried out before activating the DC quantity control in the overmodulation range.

p3856[0...n] Compound braking current / Compound I_brake

PM240

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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 braking function.

Compound braking is a superimposition of the DC braking 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 % x (r0209 - r0331) / p0305 / 2

Compound braking generates a current in the motor with a ripple manifesting the rotational frequency. The higher the braking current is set, the higher the resulting ripple, especially when the Vdc_max control is simultaneously active (refer to p1280).

Note: The parameter value is entered relative to the rated motor current (p0305).

Compound braking is deactivated with p3856 = 0%.

p3857[0...n] DC quantity controller P gain / DC_ctrl Kp

PM230
PM240

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6797
Min	**Max**	**Factory setting**
0.000	100000.000	0.000

Description: Sets the proportional gain of the DC quantity controller for the overmodulation range.

p3858[0...n] DC quantity controller integral time / DC_ctrl Tn

PM230
PM240

Access level: 3	**Calculated:** p0340 = 1,3,4	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** 6797
Min	**Max**	**Factory setting**
0.00 [ms]	1000.00 [ms]	2.00 [ms]

Description: Sets the integral time for the DC quantity controller.

r3859.1 CO/BO: DC quantity control status word / DC_ctrl ZSW

PM230			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6797
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display and connector output for the status word of the DC quantity control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
01	DC quantity control active in the overmodulation range	Yes	No	-

Dependency: Refer to: p3856

r3859.0...1 CO/BO: Compound braking/DC quantity control status word / Comp-br/DC_ctr ZSW

PM240			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 6797
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display and connector output for the status word of the compound braking and DC quantity control.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Compound braking active	Yes	No	-
01	DC quantity control active in the overmodulation range	Yes	No	-

Dependency: Refer to: p3856

p3880 BI: ESM activation signal source / ESM act s s

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7033
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to activate the essential service mode (ESM) via digital input.

Using this function, when required the motor can be operated for as long as possible (e.g. to extract smoke).

BI: p3880 = 1 signal:

The essential service mode is activated.

BI: p3880 = 0 signal:

The essential service mode is deactivated.

Dependency: Refer to: p3881, p3882, p3883, p3884, r3887, p3888, r3889

Warning: When activating the essential service mode (BI: p3880 = 1 signal), the motor immediately runs according to the selected setpoint source. When the essential service mode is activated, the motor cannot be stopped using the OFF commands.

Note: ESM: Essential Service Mode

Permissible signal sources:

- BO: r0722.x (high active)
- BO: r0723.x (low active), x = 0 ... 5, 11, 12

p3881 ESM setpoint source / ESM setp_src

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7033
Min	**Max**	**Factory setting**
0	7	0

Description: Sets the setpoint source for essential service mode (ESM).

Value:
0: Last known setpoint (r1078 smoothed)
1: Fixed speed setpoint 15 (p1015)
2: Control Unit analog input 0 (AI 0, r0755[0])
3: Fieldbus
4: Technology controller
6: Enable the response OFF1
7: Enable the response OFF2

Warning: For p3881 = 4:

If the technology controller is used as setpoint source, then this must first be configured. p2251 must be set to 0.

Note: ESM: Essential Service Mode

When the essential service mode is activated, the effective speed setpoint is displayed in r1114.

For p3881 = 0:

The last known setpoint value is only transmitted safely if it was present consistently for at least 30 s prior to activating the essential service mode. If this condition is not met, fixed speed setpoint 15 (p1015) is used.

For p3881 = 6:

n_act = 0: pulse suppression and switching on inhibited.

n_active > 0: braking along the ramp-function generator down ramp (p1121), pulse cancellation and switching on inhibited.

For p3881 = 7:

n_act = 0: pulse suppression and switching on inhibited.

n_act > 0: immediate pulse cancellation and switching on inhibited.

p3882 ESM setpoint source alternative / ESM setp_src alt

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7033
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the alternative setpoint source for essential service mode (ESM).

This setpoint is used when the setpoint source set in p3881 is lost.

Value:
0: Last known setpoint (r1078 smoothed)
1: Fixed speed setpoint 15 (p1015)
2: Maximum speed (p1082)

Dependency: Refer to: p3881

Note: ESM: Essential Service Mode

The alternative setpoint source is only active for p3881 = 2, 3, 4.

p3883 BI: ESM direction of rotation signal source / ESM rot dir s s

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7033
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the direction of rotation during essential service mode (ESM).

p3883 = 1 signal:

Direction of rotation of the setpoint, parameterized for essential service mode, is reversed.

p3883 = 0 signal:

Direction of rotation of the setpoint parameterized for essential service mode is kept.

Warning: The direction reversal is not taken into account if p3881 = 4 is set (technology controller) and the technology controller is also active as the setpoint source.

Note: ESM: Essential Service Mode

p3884 CI: ESM setpoint technology controller / ESM setp tech_ctrl

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7033
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setpoint for p3881 = 4 (technology controller) in the essential service mode (ESM).

Dependency: Refer to: p3881

Note: ESM: Essential Service Mode

For p3884 = 0:

The technology controller uses the setpoint from p2253.

r3887[0...1] ESM number of activations/faults / ESM act/fault qty

Access level: 4	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7033
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of activations and faults that have occurred for the essential service mode (ESM).

Index: [0] = Activation of the essential service mode
[1] = Faults during the essential service mode

Dependency: Refer to: p3888

Note: ESM: Essential Service Mode

p3888 ESM reset number of activations/faults / ESM act/F qty r

Access level: 4	**Calculated:** -	**Data type:** Unsigned8
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7033
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to reset the number of activations and faults that have occurred for the essential service mode (ESM).

1: counter reset active (r3887[0, 1])

0: inactive

Dependency: Refer to: r3887

Note: ESM: Essential Service Mode

The parameter is automatically reset to zero after the counter has been reset.

r3889.0...10 CO/BO: ESM status word / ESM ZSW

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7033
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for the status word of the essential service mode (ESM).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Essential service mode (ESM) activated	Yes	No	-
01	Direction of rotation inverted	Yes	No	-
02	Setpoint signal lost	Yes	No	-
03	Technology controller actual value (p2264) lost	Yes	No	-
04	Bypass active	Yes	No	-
05	Setpoint technology controller parameterized (p3884)	Yes	No	-
06	Technology controller during essential service mode active	Yes	No	-
09	Response OFF1/OFF2 activated	Yes	No	-
10	Automatic restart interrupted (F07320)	Yes	No	-

Note: ESM: Essential Service Mode

p3900 Completion of quick commissioning / Compl quick_comm

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(1)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	3	0

Description: Exits quick commissioning (p0010 = 1) with automatic calculation of all parameters of all existing drive data sets that depend on the entries made during quick commissioning.

p3900 = 1 initially includes a parameter reset (factory setting, the same as p0970 = 1) for all parameters of the drive object; however, without overwriting the entries made during the quick commissioning.

The interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p15 and p1500 are re-established and all of the dependent motor, open-loop and control-loop control parameters are calculated (corresponding to p0340 = 1).

p3900 = 2 includes the restoration of the interconnections of PROFIBUS PZD telegram selection (p0922) and the interconnections via p15 and p1500 and the calculations corresponding to p0340 = 1.

p3900 = 3 only includes the calculations associated with the motor, open-loop and closed-loop control parameters corresponding to p0340 = 1.

Value:
0: No quick parameterization
1: Quick parameterization after parameter reset
2: Quick parameterization (only) for BICO and motor parameters
3: Quick parameterization for motor parameters (only)

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

Note: When the calculations have been completed, p3900 and p0010 are automatically reset to a value of 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

r3925[0...n] Identification final display / Ident final_disp

Access level: 3 | **Calculated:** p0340 = 1 | **Data type:** Unsigned32
Can be changed: - | **Scaling:** - | **Dyn. index:** DDS, p0180
Unit group: - | **Unit selection:** - | **Func. diagram:** -

Min	Max	Factory setting
-	-	-

Description: Displays the commissioning steps that have been carried out.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	Identified motor data are automatically backed up	Yes	No	-
11	Automatic parameterization as Standard Drive Control	Yes	No	-
12	Automatic parameterization as Dynamic Drive Control	Yes	No	-
14	First motor commissioning	Yes	No	-
15	Equivalent circuit diagram parameters changed	Yes	No	-
18	Circle identification executed	Yes	No	-

Note: The individual bits are only set if the appropriate action has been initiated and successfully completed.

The identification final display is reset when changing the type plate parameters.

r3926[0...n] Voltage generation alternating base voltage amplitude / U_gen altern base

Access level: 4 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: - | **Scaling:** - | **Dyn. index:** MDS
Unit group: - | **Unit selection:** - | **Func. diagram:** -

Min	Max	Factory setting
- [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 deactivated.

<0:

Automatic determination of the base voltage and wobbulation / self-setting based on the converter and the connected motor.

Otherwise:

Base voltage for alternating current generation in volts (wobbulation active).

r3927[0...n] Motor data identification control word / MotID STW

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Successfully completed component of the last motor data identification carried out.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	Deactivate vibration detection	Yes	No	-
11	Deactivate pulse measurement Lq Ld	Yes	No	-
12	Deactivate rotor resistance Rr measurement	Yes	No	-
14	Deactivate 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	-
22	Only identify circle	Yes	No	-
23	Deactivate circle identification	Yes	No	-
24	Circle identification with 0 and 90 degrees	Yes	No	-

Dependency: Refer to: r3925

Note: The parameter is a copy of p1909.

r3928[0...n] Rotating measurement configuration / Rot meas config

Access level: 3	**Calculated:** p0340 = 1	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Successfully completed component of the last rotating measurement carried out.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-
14	Calculate speed actual value smooth. time	Yes	No	-

Dependency: Refer to: r3925

Note: The parameter is a copy of p1959.

r3929[0...n] Motor data identification modulated voltage generation / MotID U_gen mod

Access level: 4	**Calculated:** p0340 = 1	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** DDS, p0180
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Configuration of voltage generation for the various MotID sections in the case of the most recent successful MotID.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

r3930[0...4] Power unit EEPROM characteristics / PU characteristics

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the characteristics (A5E number and versions) of the power unit.

[0]: A5E number xxxx (A5Exxxxyyyy)

[1]: A5E number yyyy (A5Exxxxyyyy)

[2]: File version (logistic)

[3]: File version (fixed data)

[4]: File version (calib data)

p3931 Options for electrical cabinets / Opt elec cabinet

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 0000 0000 0000 bin

Description: Sets the options for the Power Module 330 (PM330).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Line filter	Yes	No	-
01	Line Harmonics Filter	Yes	No	-
02	du/dt filter compact Voltage Peak Limiter	Yes	No	-
03	Motor reactor	Yes	No	-
04	du/dt filter plus Voltage Peak Limiter	Yes	No	-
05	w/o line reactor	Yes	No	-
07	EmergOff button	Yes	No	-
08	Emergency Stop category 0	Yes	No	-
09	Emergency Stop category 1	Yes	No	-
10	Emergency Stop category 1 24 V	Yes	No	-
11	Braking Module (25 kW)	Yes	No	-
12	Braking Module (50 kW)	Yes	No	-

p3950 Service parameter / Serv par

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: C, U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: For service personnel only.

r3974 Drive unit status word / Drv_unit ZSW

Access level: 1	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word for the drive unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Software reset active	Yes	No	-
01	Writing of parameters disabled as parameter save in progress	Yes	No	-
02	Writing of parameters disabled as macro is running	Yes	No	-

r3978 BICO CounterDevice / BICO CounterDevice

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

Description: Displays the counter reading for modified BICO interconnections on this device.

The counter is incremented by one for each modified BICO interconnection.

p3981 Acknowledge drive object faults / Ackn DO faults

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8060
Min	**Max**	**Factory setting**
0	1	0

Description: Setting to acknowledge all active faults of a drive object.

Notice: Safety messages cannot be acknowledged using this parameter.

Note: Parameter should be set from 0 to 1 to acknowledge.

After acknowledgment, the parameter is automatically reset to 0.

p3985 Master control mode selection / PcCtrl mode select

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

Description: Sets the mode to change over the master control / LOCAL mode.

Value:
0: Change master control for STW1.0 = 0
1: Change master control in operation

Danger: When changing the master control in operation, the drive can manifest undesirable behavior - e.g. it can accelerate up to another setpoint.

r3986 Number of parameters / Param count

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of parameters for this drive unit.

The number comprises the device-specific and the drive-specific parameters.

Dependency: Refer to: r0980, r0981, r0989

r3988[0...1] Boot state / Boot_state

Access level: 4	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	800	-

Description: Index 0:

Displays the boot state.

Index 1:

Displays the partial boot state

Value:
0: Not active
1: Fatal fault
10: Fault
20: Reset all parameters
30: Drive object modified
40: Download using commissioning software
50: Parameter download using commissioning software
90: Reset Control Unit
100: Start initialization
101: Only for internal Siemens use
110: Instantiate Control Unit basis

111: Only for internal Siemens use
112: Only for internal Siemens use
113: Only for internal Siemens use
114: Only for internal Siemens use
115: Parameter download using commissioning software
117: Only for internal Siemens use
150: Wait until Power Module is determined
160: Evaluate Power Module
170: Instantiate Control Unit reset
180: Only for internal Siemens use
200: First commissioning
210: Create drive packages
250: Wait for fault acknowledge
325: Wait for input of drive type
350: Determine drive type
360: Only for internal Siemens use
370: Wait until p0010 is set to 0
380: Only for internal Siemens use
550: Call conversion functions for parameter
625: Wait for non-cyclic start
650: Start cyclic operation
660: Evaluate drive commissioning status
670: Only for internal Siemens use
680: Only for internal Siemens use
690: Wait for non-cyclic start
700: Save parameters
725: Wait for cyclic
740: Check the ability to operate
745: Start cyclic calculations
750: Interrupt enable
800: Initialization finished

Index: [0] = System
[1] = Partial boot

r3996[0...1] Parameter write inhibit status / Par_write inhib st

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

Description: Displays whether writing to parameters is inhibited.

r3996[0] = 0:

Parameter write not inhibited.

0 < r3996[0] < 100:

Parameter write inhibited. The value shows how the calculations are progressing.

Index: [0] = Progress calculations
[1] = Cause

Note: For index 1:

Only for internal Siemens troubleshooting.

r4022.0...3 CO/BO: PM330 digital inputs status / PM330 DI status

PM330	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the status of the digital inputs of the PM330 power unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X9.3, external alarm)	High	Low	-
01	DI 1 (X9.4, external fault)	High	Low	-
02	DI 2 (X9.5, Emergency Off category 0)	High	Low	-
03	DI 3 (X9.6, Emergency Off category 1)	High	Low	-

Dependency: Refer to: r4023

Note: DI: Digital Input

r4023.0...3 CO/BO: PM330 digital inputs status inverted / PM330 DI stat inv

PM330	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the inverted status of the digital inputs of Power Module 330 (PM330).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X9.3, external alarm)	High	Low	-
01	DI 1 (X9.4, external fault)	High	Low	-
02	DI 2 (X9.5, Emergency Off category 0)	High	Low	-
03	DI 3 (X9.6, Emergency Off category 1)	High	Low	-

Dependency: Refer to: r4022

Note: DI: Digital Input

r4047 PM330 digital outputs status / PM330 DO status

PM330	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the status of the digital outputs of Power Module 330 (PM330).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DO 0 (X9.8: enable signal UDC link charged)	High	Low	-
01	DO 1 (X9.11/X9.12: main contactor control)	High	Low	-

Note: DO: Digital Output

p4095 PM330 digital inputs simulation mode / PM330 DI sim_mode

PM330

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: U, T | **Scaling:** - | **Dyn. index:** -
Unit group: - | **Unit selection:** - | **Func. diagram:** -

Min	Max	Factory setting
-	-	0000 bin

Description: Sets the simulation mode for digital inputs of the PM330 power unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X9.3, external alarm)	Simulation	Terminal eval	-
01	DI 1 (X9.4, external fault)	Simulation	Terminal eval	-
02	DI 2 (X9.5, Emergency Off category 0)	Simulation	Terminal eval	-
03	DI 3 (X9.6, Emergency Off category 1)	Simulation	Terminal eval	-

Dependency: The setpoint for the input signals is specified using p4096.

Refer to: p4096

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

p4096 PM330 digital inputs simulation mode setpoint / PM330 DI sim setp

PM330

Access level: 3 | **Calculated:** - | **Data type:** Unsigned32
Can be changed: U, T | **Scaling:** - | **Dyn. index:** -
Unit group: - | **Unit selection:** - | **Func. diagram:** 2275

Min	Max	Factory setting
-	-	0000 bin

Description: Sets the setpoint for the input signals in the digital input simulation mode of the PM330 power unit.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	DI 0 (X9.3, external alarm)	High	Low	-
01	DI 1 (X9.4, external fault)	High	Low	-
02	DI 2 (X9.5, Emergency Off category 0)	High	Low	-
03	DI 3 (X9.6, Emergency Off category 1)	High	Low	-

Dependency: The simulation of a digital input is selected using p4095.

Refer to: p4095

Note: This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

p5350[0...n] Mot_temp_mod 1/3 boost factor at standstill / Standst boost_fact

Access level: 2 | **Calculated:** - | **Data type:** FloatingPoint32
Can be changed: C(3), U, T | **Scaling:** - | **Dyn. index:** MDS
Unit group: - | **Unit selection:** - | **Func. diagram:** 8017

Min	Max	Factory setting
1.0000	2.0000	2.0000

Description: Sets the boost factor for the copper losses at standstill for motor temperature models 1 and 3.

The entered factor is active for speed n = 0 [rpm].

This factor is linearly reduced down to 1 between speeds n = 0 ... 1 [rpm].

The following values are required to calculate the boost factor:

- stall current (I_0, p0318, catalog value)
- thermal stall current (I_th0, catalog value)

The boost factor is calculated as follows:

- p5350 = (I_0 / I_th0)^2

Dependency: Refer to: p0318, p0612, p5390, p5391

Refer to: F07011, A07012, A07014

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: Temperature model 1 (I2t):

The following applies for firmware version < 4.7 SP6 or p0612.8 = 0:

- parameter p5350 is not active. Internally, a fixed boost factor of 1.333 is used as basis for the calculation.

The following applies from firmware version 4.7 SP6 and p0612.8 = 1:

- parameter p5350 becomes active as described above.

r5389.0...8 CO/BO: Mot_temp status word faults/alarms / Mot_temp ZSW F/A

Access level: 2	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 8016
Min	**Max**	**Factory setting**
-	-	-

Description: Display and BICO output for faults and alarms of the motor temperature monitoring.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Motor temperature measurement fault active	Yes	No	-
01	Motor temperature model fault active	Yes	No	-
02	Encoder temperature measurement fault active	Yes	No	-
04	Motor temperature measurement alarm active	Yes	No	-
05	Motor temperature measurement alarm active	Yes	No	-
08	Current reduction active	Yes	No	-

Dependency: Refer to: r0034, p0612, r0632

Refer to: F07011, A07012, A07910

Note: For bit 00, 04:

The motor temperature is measured using a temperature sensor (p0600, p0601). When the bit is set, a high temperature is identified, and a corresponding signal is additionally output.

For bit 01, 05:

The motor temperature is monitored based on a temperature model (p0612). When the bit is set, a high temperature is identified, and a corresponding signal is additionally output.

For bit 02:

The encoder temperature is measured using a temperature sensor. When the bit is set, a high temperature is identified, and a corresponding signal is additionally output.

For bit 08:

When reaching the motor temperature alarm threshold, reduction of the maximum current is set as response (p0610 = 1). When the bit is set, reduction of the maximum current is active.

p5390[0...n] Mot_temp_mod 1/3 alarm threshold / A thresh

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8017
Min	**Max**	**Factory setting**
0.0 [°C]	200.0 [°C]	110.0 [°C]

Description: Sets the alarm threshold for monitoring the motor temperature for motor temperature models 1 and 3.

The stator winding temperature (r0632) is used to initiate the signal.

The following applies for temperature model 1 (I2t):

- only effective from firmware version 4.7 SP6 and p0612.8 = 1.
- Alarm A07012 is output after the alarm threshold is exceeded.
- when commissioning a catalog motor for the first time, the threshold value is copied from p0605 to p5390.

The following applies for temperature model 3:

- after the alarm threshold is exceeded, alarm A07012 is output and a calculated delay time (t = p5371/p5381) is started.
- if the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output.

Dependency: Refer to: r0034, p0605, p0612, r0632, p5391

Refer to: F07011, A07012, A07014

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.

p5391[0...n] Mot_temp_mod 1/3 fault threshold / F thresh

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: C(3), U, T	**Scaling:** -	**Dyn. index:** MDS
Unit group: 21_1	**Unit selection:** p0505	**Func. diagram:** 8017
Min	**Max**	**Factory setting**
0.0 [°C]	200.0 [°C]	120.0 [°C]

Description: Sets the fault threshold for monitoring the motor temperature for motor temperature models 1 and 3.

Fault F07011 is output after the fault threshold is exceeded.

The stator winding temperature (r0632) is used to initiate the signal.

The following applies for temperature model 1 (I2t):

- only effective from firmware version 4.7 SP6 and p0612.8 = 1.
- when commissioning a catalog motor for the first time, the threshold value is copied from p0615 to p5391.

Dependency: Refer to: r0034, p0612, p0615, r0632, p5390

Refer to: F07011, A07014

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.

r5600 Pe energy-saving mode ID / Pe mode ID

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2381, 2382
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the PROFIenergy mode ID of the effective energy-saving mode.

Value:

0: POWER OFF
2: Energy-saving mode 2
240: Operation
255: Ready

Note: Pe: PROFIenergy profiles

p5602[0...1] Pe energy-saving mode pause time minimal / Pe mod t_pause min

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2381
Min	**Max**	**Factory setting**
300000 [ms]	4294967295 [ms]	[0] 300000 [ms] [1] 480000 [ms]

Description: Sets the minimum possible pause time for the energy-saving mode.

The value is the sum of the following times:

- Energy-saving mode transition time
- Operating state transition time regular
- Energy-saving mode, time of minimum stay

Index:

[0] = Reserved
[1] = Mode 2

Note: It is not permissible that the value is less than the sum of the "energy-saving mode transition time" and the "operating state transition time" (system properties).

Pe: PROFIenergy profiles

p5606[0...1] Pe energy-saving mode time of maximum stay / Pe t_max_stay

CU230P-2_PN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2381
	Min	**Max**	**Factory setting**
	0 [ms]	4294967295 [ms]	4294967295 [ms]

Description: Sets the time of maximum stay for the energy-saving mode.

Index: [0] = Reserved
[1] = Mode 2

Note: Pe: PROFIenergy profiles

p5611 Pe energy-saving properties general / Pe properties gen

CU230P-2_PN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2381, 2382
	Min	**Max**	**Factory setting**
	-	-	0000 bin

Description: Sets the general properties for energy-saving.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Inhibit PROFIenergy control commands	Yes	No	-
01	Drive initiates OFF1 when transitioning to energy-saving mode	Yes	No	-
02	Trans to energy-saving mode from PROFIdrive state S3/4 poss	Yes	No	-

Note: Pe: PROFIenergy profiles
PROFIdrive state S4: operation

p5612[0...1] Pe energy-saving properties mode-dependent / Pe properties mod

CU230P-2_PN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	[0] 0110 bin [1] 0000 bin

Description: Sets the mode-dependent properties for energy-saving.

Index: [0] = Reserved
[1] = Mode 2

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

CU230P-2_PN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned8
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2382
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display and binector output for the state display PROFIenergy energy saving active or inactive.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Pe active	Yes	No	-
01	Pe inactive	Yes	No	-

Note: Bit 0 and bit 1 are inverse of one another.
Pe: PROFIenergy profiles

p5614 BI: Pe set switching on inhibited signal source / Pe sw-on_inh s_src

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2382
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to set in the PROFIdrive state S1 "switching on inhibited".

Dependency: Refer to: r5613

Note: Pe: PROFIenergy profiles

p7610[0...78] Fieldbus interface BACnet device name / BACnet device name

CU230P-2_HVAC
CU230P-2_BT

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9310
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the object name for the BACnet device object.

This name must be unique within the complete BACnet network.

The object name is only preassigned with device name and serial number the first time that the system runs up, e.g. "SINAMICS G120 CU230P-2 HVAC - XAB812-005806"

Note: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

r7758[0...19] KHP Control Unit serial number / KHP CU ser_no

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

Description: Displays the actual serial number of the Control Unit.

The individual characters of the serial number are displayed in the ASCII code in the indices.

For the commissioning software, the ASCII characters are displayed uncoded.

Dependency: Refer to: p7765, p7766, p7767, p7768

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

Note: KHP: Know-How Protection

p7759[0...19] KHP Control Unit reference serial number / KHP CU ref ser_no

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the reference serial number for the Control Unit.

Using this parameter, if a Control Unit and/or a memory card is replaced at the end customer, the OEM can again adapt the project to the modified hardware.

Dependency: Refer to: p7765, p7766, p7767, p7768

Note: KHP: Know-How Protection

- the OEM may only change this parameter for the use case "Sending encrypted SINAMICS data".

- SINAMICS only evaluates this parameter when powering up from the encrypted "Load into file system..." output or when powering up from the encrypted PS files. The evaluation is only made when know-how protection and memory card copy protection have been activated.

r7760.0...12 CO/BO: Write protection/know-how protection status / Wr_prot/KHP stat

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status for the write protection and know-how protection.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-
12	Reserved Siemens	Yes	No	-

Dependency: Refer to: p7761, p7765, p7766, p7767, p7768

Note: KHP: Know-How Protection

For bit 00:

Write protection can be activated/deactivated via p7761 on the Control Unit.

For bit 01:

The know-how protection can be activated by entering a password (p7766 ... p7768).

For 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.

For 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.

For 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.

For 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.

For 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.

p7761 Write protection / Write protection

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

Description: Setting for activating/deactivating the write protection for adjustable parameters.

Value:
0: Deactivate write protection
1: Activate write protection

Dependency: Refer to: r7760

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.

p7762 Write protection multi-master fieldbus system access behavior / Fieldbus acc_behav

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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

p7763 KHP OEM exception list number of indices for p7764 / KHP OEM qty p7764

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

p7764[0...n] KHP OEM exception list / KHP OEM excep list

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** p7763
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

p7765 KHP configuration / KHP config

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0000 bin

Description: Configuration settings for know-how protection.
For 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.
For 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.

For 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

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

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

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

Description: Sets the new password for know-how protection.

Dependency: Refer to: p7766, p7768

Note: KHP: Know-How Protection

When reading, p7767[0...29] = 42 dec (ASCII character = "*") is displayed.

p7768[0...29] KHP password confirmation / KHP passw confirm

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

Description: Confirms the new password for know-how protection.

Dependency: Refer to: p7766, p7767

Note: KHP: Know-How Protection

When reading, p7768[0...29] = 42 dec (ASCII character = "*") is displayed.

p7769[0...20] KHP memory card reference serial number / KHP mem ref ser_no

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the reference serial number for the memory card.

Using this parameter, if a Control Unit and/or a memory card is replaced at the end customer, the OEM can again adapt the project to the modified hardware.

Dependency: Refer to: p7765, p7766, p7767, p7768

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.

p7775 NVRAM data backup/import/delete / NVRAM backup

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: C, U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	17	0

Description: Setting to backup/import/delete NVRAM data.

NVRAM data are non-volatile data in the device (e.g. fault buffer).

For NVRAM data actions, the following data are excluded:

- crash diagnostics
- CU operating hours counter
- CU temperature
- safety logbook

Value:

0: Inactive
1: NVRAM data backup to memory card
2: Import NVRAM data from the memory card
3: Delete NVRAM data in the device
10: Error when clearing
11: Error when backing up, memory card not available
12: Error when backing up, insufficient memory space
13: Error when backing up
14: Error when importing, memory card not available
15: Error when importing, checksum error
16: Error when importing, no NVRAM data available
17: Error when importing

Notice: For value = 2, 3:

These actions are only possible when pulses are inhibited.

Note: After the action has been successfully completed, the parameter is automatically set to zero.
The actions importing and deleting NVRAM data immediately initiate a warm restart.
If the procedure was not successfully completed, then an appropriate fault value is displayed (p7775 >= 10).

r7841[0...15] Power Module serial number / PM serial no.

Access level: 4	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual serial number of the Power Module.
The individual characters of the serial number are displayed in the ASCII code in the indices.

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

r7843[0...20] Memory card serial number / Mem_card ser.no

Access level: 1	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

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

r7844[0...2] Memory card/device memory firmware version / Mem_crd/dev_mem FW

Access level: 2	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the version of the firmware stored on the memory medium of the drive device.
Depending on the drive device being used, the memory medium is a memory card, or an internal non-volatile device memory.

Index: [0] = Internal
[1] = External
[2] = Parameter backup

Note: For index 0:
Displays the internal firmware version (e.g. 04402315).
This firmware version is the version of the memory card/device memory and not the CU firmware (r0018), however, normally they have the same versions.

For index 1:
Displays the external firmware version (e.g. 04040000 -> 4.4).
For automation systems with SINAMICS Integrated this is the runtime version of the automation system.
For index 2:
Displays the internal firmware version of the parameter backup.
With this CU firmware version, the parameter backup was saved, which was used when powering up.

r7901[0...81] Sampling times / t_sample

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [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 the following:
No methods have been registered in the time slice involved.

Note: The basis for the software time slices is T_NRK = p7901[13].

r7903 Hardware sampling times still assignable / HW t_samp free

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of hardware sampling times that can still be assigned.
These free sampling times can be used by OA applications such as DCC or FBLOCKS.

Note: OA: Open Architecture

p8400[0...2] RTC time / RTC time

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	59	0

Description: Sets and displays the time on the real-time clock in hours, minutes, and seconds.
The time is stored in the internal clock block in the drive and continues to run even if the supply voltage for the Control Unit is interrupted (for approx. 5 days).

Index:
[0] = Hour (0 ... 23)
[1] = Minute (0 ... 59)
[2] = Second (0 ... 59)

Note: The time from p8400 and p8401 is used to display the fault and alarm times.
When displaying the fault time and alarm time, the switchover to daylight saving time is not taken into account.
The parameter is not reset when the factory setting is restored (p0010 = 30, p0970).
The time is entered and displayed in 24-hour format.
RTC: Real-time clock

p8401[0...2] RTC date / RTC date

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	9999	[0] 1 [1] 1 [2] 1970

Description: Sets and displays the date on the real-time clock in year, month, and day.

The date is stored in the internal clock block in the drive and continues to run even if the supply voltage for the Control Unit is interrupted (for approx. 5 days).

Recommendation: When the date is set as an index, the day should always be written last because, if a date is invalid, the day is always corrected to the last valid day in that particular month of the year.

Index:
[0] = Day (1 ... 31)
[1] = Month (1 ... 12)
[2] = Year (YYYY)

Note: The time from p8400 and p8401 is used to display the fault and alarm times.

When displaying the fault time and alarm time, the switchover to daylight saving time is not taken into account.

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

RTC: Real-time clock

p8402[0...8] RTC daylight saving time setting / RTC DST

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	23	[0] 0 [1] 3 [2] 6 [3] 7 [4] 2 [5] 10 [6] 6 [7] 7 [8] 3

Description: Setting the daylight saving time.

The factory setting corresponds to the time change for central european summer time (CEST). You only have to set p8402[0] = 1 to activate CEST.

Index:
[0] = Difference (0 ... 3 hours)
[1] = Start of month (1 ... 12)
[2] = Start of the week of the month (1 ... 4, 6)
[3] = Start of weekday (1 ... 7)
[4] = Start of hour (0 ... 23)
[5] = End of month (1 ... 12)
[6] = End of the week of the month (1 ... 4, 6)
[7] = End of weekday (1 ... 7)
[8] = End of hour (0 ... 23)

Note: The switchover to daylight saving time only effects the RTC and DTC parameters (p8400 ... p8433).

When displaying the fault time and alarm time, the switchover to daylight saving time is not taken into account.

There must be at least two months between the start and end of daylight saving time.

For index 0:

0: daylight saving time switchover deactivated

1 ... 3: time difference

For indices 1 and 5:
1 = January, ... , 12 = December
For indices 2 and 6:
1 = from the 1st to the 7th of the month
2 = from the 8th to the 14th of the month
3 = from the 15th to the 21st of the month
4 = from the 22nd to the 28th of the month
6 = the last 7 days of the month
For indices 3 and 7:
1 = Monday, ... , 7 = Sunday

r8403 RTC actual daylight saving time difference / RTC act DST

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the actual time difference in hours for the daylight saving time

Note: The value is 0, if daylight saving time has not been defined using p8402.

If it is presently daylight saving time according to what is defined in p8402, then the parameter indicates the time difference between daylight saving time and normal time (p8402[0]).

r8404 RTC weekday / RTC weekday

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
1	7	-

Description: Displays the weekday on the real-time clock.

Value:
1: Monday
2: Tuesday
3: Wednesday
4: Thursday
5: Friday
6: Saturday
7: Sunday

Note: RTC: Real-time clock

p8405 Activate/deactivate RTC alarm A01098 / RTC A01098 act

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	1	1

Description: Sets whether the real-time clock outputs an alarm if the time is not synchronized (e.g. if the power supply was switched off for an extended period).

Value:
0: Alarm A01098 deactivated
1: Alarm A01098 activated

Dependency: Refer to: A01098

Note: RTC: Real-time clock

p8409 RTC DTC activation / RTC DTC act

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

Description: Sets the activation/deactivation of the parameters for timers DTC1, DTC2, DTC3.

For p8409 = 0, the following applies:

DTC1 parameters p8410, p8411, p8412 are inactive and can be set. Binector output r8413.0 = 0.

DTC2 parameters p8420, p8421, p8422 are inactive and can be set. Binector output r8423.0 = 0.

DTC3 parameters p8430, p8431, p8432 are inactive and can be set. Binector output r8433.0 = 0.

For p8409 = 1, the following applies:

DTC1 parameters p8410, p8411, p8412 are active and cannot be set. Binector outputs r8413 are active.

DTC2 parameters p8420, p8421, p8422 are active and cannot be set. Binector outputs r8423 are active.

DTC3 parameters p8430, p8431, p8432 are active and cannot be set. Binector outputs r8433 are active.

Value:
0: DTC inactive and can be set
1: DTC active and cannot be set

Dependency: Refer to: p8410, p8411, p8412, r8413, p8420, p8421, p8422, r8423, p8430, p8431, p8432, r8433

Note: DTC: Digital Time Clock (timer)

RTC: Real-time clock

p8410[0...6] RTC DTC1 weekday of activation / RTC DTC1 day act

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the weekday on which timer 1 is activated (DTC1).

The switch-on/off time is set in p8411/p8412 and the result displayed via binector output r8413.

Value:
0: Weekday deactivated
1: Weekday activated

Index:
[0] = Monday
[1] = Tuesday
[2] = Wednesday
[3] = Thursday
[4] = Friday
[5] = Saturday
[6] = Sunday

Dependency: Refer to: p8409, p8411, p8412, r8413

Notice: This parameter can only be changed when p8409 = 0.

Note: DTC: Digital Time Clock (timer)

RTC: Real-time clock

p8411[0...1] RTC DTC1 switch-on time / RTC DTC1 t_ON

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	59	0

Description: Sets the switch-on time in hours and minutes for time switch 1 (DTC1).

BO: r8413 = 1 signal:

The condition for the set weekday (p8410) and switch-on time has been fulfilled.

Index:
[0] = Hour (0 ... 23)
[1] = Minute (0 ... 59)

Dependency: Refer to: p8409, p8410, r8413

Notice: This parameter can only be changed when p8409 = 0.

Note: DTC: Digital Time Clock (timer)
RTC: Real-time clock

p8412[0...1] RTC DTC1 off time / RTC DTC1 t_OFF

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	59	0

Description: Sets the switch-off time in hours and minutes for time switch 1 (DTC1).
BO: r8413 = 0 signal:
The condition for the set weekday (p8410) and switch-off time has been fulfilled.

Index: [0] = Hour (0 ... 23)
[1] = Minute (0 ... 59)

Dependency: Refer to: p8409, p8410, r8413

Notice: This parameter can only be changed when p8409 = 0.

Note: DTC: Digital Time Clock (timer)
RTC: Real-time clock

r8413.0...1 BO: RTC DTC1 output / RTC DTC1 output

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the output of time switch 1 (DTC1).
Where a weekday is deactivated, the following applies (p8410):
- the binector output for this timer is inactive (r8413.0 = 0).
Where a weekday is activated, the following applies (p8410):
- the ON/OFF time setting (p8411, p8412) for this timer has an instant effect on the binector output (r8413).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Timer on	Yes	No	-
01	Timer ON negated	No	Yes	-

Dependency: Refer to: p8409, p8410, p8411, p8412

Notice: This parameter can only be changed when p8409 = 0.

Note: DTC: Digital Time Clock (timer)
RTC: Real-time clock

p8420[0...6] RTC DTC2 weekday of activation / RTC DTC2 day act

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the weekday on which timer 2 is activated (DTC2).
The switch-on/off time is set in p8421/p8422 and the result displayed via binector output r8423.

Value: 0: Weekday deactivated
1: Weekday activated

Index: [0] = Monday
[1] = Tuesday
[2] = Wednesday
[3] = Thursday

[4] = Friday
[5] = Saturday
[6] = Sunday

Dependency: Refer to: p8409, p8421, p8422, r8423

Notice: This parameter can only be changed when p8409 = 0.

Note: DTC: Digital Time Clock (timer)
RTC: Real-time clock

p8421[0...1] RTC DTC2 switch-on time / RTC DTC2 t_ON

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	59	0

Description: Sets the switch on time in hours and minutes for time switch 2 (DTC2).
BO: r8423 = 1 signal:
The condition for the set weekday (p8420) and switch-on time has been fulfilled.

Index: [0] = Hour (0 ... 23)
[1] = Minute (0 ... 59)

Dependency: Refer to: p8409, p8420, r8423

Notice: This parameter can only be changed when p8409 = 0.

Note: DTC: Digital Time Clock (timer)
RTC: Real-time clock

p8422[0...1] RTC DTC2 off time / RTC DTC2 t_OFF

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	59	0

Description: Sets the switch off time in hours and minutes for time switch 2 (DTC2).
BO: r8423 = 0 signal:
The condition for the set weekday (p8420) and switch-off time has been fulfilled.

Index: [0] = Hour (0 ... 23)
[1] = Minute (0 ... 59)

Dependency: Refer to: p8409, p8420, r8423

Notice: This parameter can only be changed when p8409 = 0.

Note: DTC: Digital Time Clock (timer)
RTC: Real-time clock

r8423.0...1 BO: RTC DTC2 output / RTC DTC2 output

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the output of timer 2 (DTC2).
Where a weekday is deactivated, the following applies (p8420):
- the binector output for this timer is inactive (r8423.0 = 0).
Where a weekday is activated, the following applies (p8420):
- the ON/OFF time setting (p8421, p8422) for this timer has an instant effect on the binector output (r8423).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Timer on	Yes	No	-
01	Timer ON negated	No	Yes	-

Dependency: Refer to: p8409, p8420, p8421, p8422
Notice: This parameter can only be changed when p8409 = 0.
Note: DTC: Digital Time Clock (timer)
RTC: Real-time clock

p8430[0...6] RTC DTC3 weekday of activation / RTC DTC3 day act

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the weekday on which timer 3 is activated (DTC3).
The switch-on/off time is set in p8431/p8432 and the result displayed via binector output r8433.
Value: 0: Weekday deactivated
1: Weekday activated
Index: [0] = Monday
[1] = Tuesday
[2] = Wednesday
[3] = Thursday
[4] = Friday
[5] = Saturday
[6] = Sunday
Dependency: Refer to: p8409, p8431, p8432, r8433
Notice: This parameter can only be changed when p8409 = 0.
Note: DTC: Digital Time Clock (timer)
RTC: Real-time clock

p8431[0...1] RTC DTC3 switch-on time / RTC DTC3 t_ON

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	59	0

Description: Sets the switch on time in hours and minutes for timer 3 (DTC3).
BO: r8433 = 1 signal:
The condition for the set weekday (p8430) and switch-on time has been fulfilled.
Index: [0] = Hour (0 ... 23)
[1] = Minute (0 ... 59)
Dependency: Refer to: p8409, p8430, r8433
Notice: This parameter can only be changed when p8409 = 0.
Note: DTC: Digital Time Clock (timer)
RTC: Real-time clock

p8432[0...1] RTC DTC3 off time / RTC DTC3 t_OFF

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	59	0

Description: Sets the switch off time in hours and minutes for timer 3 (DTC3).
BO: r8433 = 0 signal:
The condition for the set weekday (p8430) and switch-off time has been fulfilled.
Index: [0] = Hour (0 ... 23)
[1] = Minute (0 ... 59)
Dependency: Refer to: p8409, p8430, r8433

Notice: This parameter can only be changed when p8409 = 0.

Note: DTC: Digital Time Clock (timer)

RTC: Real-time clock

r8433.0...1 BO: RTC DTC3 output / RTC DTC3 output

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for the output of timer 3 (DTC3).

Where a weekday is deactivated, the following applies (p8430):

- the binector output for this timer is inactive (r8433.0 = 0).

Where a weekday is activated, the following applies (p8430):

- the ON/OFF time setting (p8431, p8432) for this timer has an instant effect on the binector output (r8433).

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Timer on	Yes	No	-
01	Timer ON negated	No	Yes	-

Dependency: Refer to: p8409, p8430, p8431, p8432

Notice: This parameter can only be changed when p8409 = 0.

Note: DTC: Digital Time Clock (timer)

RTC: Real-time clock

r8540.0...15 BO: STW1 from IOP in the manual mode / STW1 IOP

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: For the manual mode: the STW1 (control word 1) entered from the IOP is displayed.

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	Reserved	Yes	No	-
04	Reserved	Yes	No	-
05	Reserved	Yes	No	-
06	Reserved	Yes	No	-
07	Acknowledge fault	Yes	No	-
08	Jog bit 0	Yes	No	3030
09	Jog bit 1	Yes	No	3030
10	Reserved	Yes	No	-
11	Direction reversal (setpoint)	Yes	No	-
12	Reserved	Yes	No	-
13	Reserved	Yes	No	-
14	Reserved	Yes	No	-
15	Reserved	Yes	No	-

r8541 CO: Speed setpoint from the IOP in the manual mode / n_set IOP

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** p2000	**Dyn. index:** -
Unit group: 3_1	**Unit selection:** p0505	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [rpm]	- [rpm]	- [rpm]

Description: For the manual mode: the speed setpoint entered from the IOP is displayed.

p8542[0...15] BI: Active STW1 in the BOP/IOP manual mode / STW1 act OP

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	[0] 8540.0 [1] 8540.1 [2] 8540.2 [3] 8540.3 [4] 8540.4 [5] 8540.5 [6] 8540.6 [7] 8540.7 [8] 8540.8 [9] 8540.9 [10] 8540.10 [11] 8540.11 [12] 8540.12 [13] 8540.13 [14] 8540.14 [15] 8540.15

Description: For the manual mode: Setting of the signal sources for STW1 (control word 1).

Index:
[0] = ON/OFF1
[1] = OC / OFF2
[2] = OC / OFF3
[3] = Enable operation
[4] = Enable ramp-function generator
[5] = Continue ramp-function generator
[6] = Enable speed setpoint
[7] = Acknowledge fault
[8] = Jog bit 0
[9] = Jog bit 1
[10] = Master control by PLC
[11] = Direction reversal (setpoint)
[12] = Enable speed controller
[13] = Motorized potentiometer raise
[14] = Motorized potentiometer lower
[15] = CDS bit 0

p8543 CI: Active speed setpoint in the BOP/IOP manual mode / N_act act OP

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** p2000	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	8541[0]

Description: For the manual mode: Sets the signal source for the speed setpoint.

p8552 IOP speed unit / IOP speed unit

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
1	2	1

Description: Sets the unit for displaying and entering speeds.

Value:
1: Hz
2: rpm

p8558 BI: Select IOP manual mode / Sel IOP man mode

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0

r8570[0...39] Macro drive object / Macro DO

Access level: 1	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the macro file saved in the appropriate directory on the memory card/device memory.

Dependency: Refer to: p0015

Note: For a value = 9999999, the following applies: The read operation is still running.

r8571[0...39] Macro Binector Input (BI) / Macro BI

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

Description: Displays the ACX file saved in the appropriate directory in the non-volatile memory.

Note: For a value = 9999999, the following applies: The read operation is still running.

r8572[0...39] Macro Connector Inputs (CI) for speed setpoints / Macro CI n_set

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

Description: Displays the ACX file saved in the appropriate directory in the non-volatile memory.

Dependency: Refer to: p1000

Note: For a value = 9999999, the following applies: The read operation is still running.

r8573[0...39] Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set

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

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.

r8585 Macro execution actual / Macro executed

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the macro currently being executed on the drive object.

Dependency: Refer to: p0015, p1000, r8570, r8571, r8572, r8573

r8600 CAN device type / Device type

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays all of the devices connected to the CAN bus after run-up.
r8600
= 00000000 hex: No drive recognized.
= 02010192 hex: 1 vector drive.

Note: Corresponds to the CANopen object 1000 hex.
For each detected drive, the device type is displayed in object 67FF hex.

r8601 CAN error register / Error register

CU230P-2_CAN

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

Description: Displays the error register for CANopen.
Bit 0: Generic error.
0 signal: No error present.
1 signal: Generic error present.
Bit 1 ... 3: Not supported (always a 0 signal).
Bit 4: Communications error.
0 signal: There is no message in the range 8700 ... 8799.
1 signal: There is at least one message (fault or alarm) in the range 8700 ... 8799.
Bit 5 ... 6: Not supported (always a 0 signal).
Bit 7: Fault outside the range 8700 ... 8799.
0 signal: There is no fault outside the range 8700 ... 8799.
1 signal: There is at least one fault outside the range 8700 ... 8799.

Note: Corresponds to the CANopen object 1001 hex.

p8602 CAN SYNC object / SYNC object

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0080 hex

Description: Sets the SYNC object parameter for the following CANopen objects:

- 1005 hex: COB-ID

Note: SINAMICS operates as SYNC load.

COB-ID: CAN object identification

p8603 CAN COB-ID Emergency Message / COB-ID EMCY Msg

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the COB-ID for the emergency message (error telegram).

It corresponds to the CANopen objects:

- 1014 hex: COB-ID

Note: If, when downloading, the pre-set value 0 is downloaded, then the CANopen pre-set value 80 hex + Node-ID is automatically set.

Online, the value 0 is rejected as, according to the CANopen Standard, COB-ID 0 is not permitted here.

The changeover of the node ID using the hardware switch at the Control Unit or per software has no effect on the COB-ID EMCY. The saved value remains effective.

p8604[0...1] CAN life guarding / Life guarding

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	65535	0

Description: Sets the life guarding parameter for the following CANopen objects:

- 100C hex: Guard Time
- 100D hex: Life Time Factor

The life time is derived by multiplying guard time by the life time factor.

Index: [0] = Time interval [ms] for the life time
[1] = Factor for the lifetime

Dependency: Refer to: p8606

Refer to: F08700

Note: For p8604[0] = 0 and/or p8604[1] = 0, the life guarding event service (monitoring the node guarding, fault F08700 with fault value = 2) is deactivated.

The node guarding protocol is active without the life guarding event service, if the heartbeat protocol is deactivated (p8606 = 0).

p8606 CAN Producer Heartbeat Time / Prod Heartb Time

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0 [ms]	65535 [ms]	0 [ms]

Description: Sets the time [ms] to cyclically send heartbeat telegrams.

The smallest cycle is 100 ms.

For p8606 = 0, heartbeat telegrams are not sent.

Dependency: Refer to: p8604

Note: Corresponds to the CANopen object 1017 hex.

Activating the heartbeat protocol automatically deactivates the node guarding.

r8607[0...3] CAN Identity Object / Identity object

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: General device information display.

Index:
[0] = Vendor ID
[1] = Product code
[2] = Revision number
[3] = Serial number

Note: Corresponds to the CANopen object 1018 hex.

For index 3:

The SINAMICS serial number comprises 60 bits.

Of these bits, the following are displayed in this index:

Bits 0 ... 19: Consecutive number

Bit 20 ... 23: reserved

Bits 24 ... 27: Month of manufacture (0 means January, B means December)

Bits 28 ... 31: Year of manufacture (0 means 2002)

p8608[0...1] CAN Clear Bus Off Error / Clear bus off err

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	1	0

Description: As a result of a Bus Off error, the CAN controller is set into the initialization state.

Index 0:

The CAN controller is manually started after resolving the cause of the error with p8608[0] = 1.

Index 1:

The automatic CAN bus start function is activated using p8608[1] = 1.

At 2 second intervals, the CAN controller is automatically restarted until the cause of the error has been resolved and a CAN connection has been established.

Value:
0: Inactive
1: Start CAN controller

Index:
[0] = Manual controller start function
[1] = Activating the automatic controller start function

Note: For index 0:

This parameter is automatically reset to 0 after start.

p8609[0...1] CAN Error Behavior / Error behavior

CU230P-2_CAN	Access level: 3	Calculated: -	Data type: Integer16
	Can be changed: T	Scaling: -	Dyn. index: -
	Unit group: -	Unit selection: -	Func. diagram: -
	Min	**Max**	**Factory setting**
	0	2	1

Description: Sets the behavior of the CAN node referred to the communications error or equipment fault.

Value:
0: Pre-operational
1: No change
2: Stopped

Index:
[0] = Behavior for communication errors
[1] = Behavior for device faults

Note: Corresponds to the CANopen object 1029 hex.

r8610[0...1] CAN First Server SDO / First server SDO

CU230P-2_CAN	Access level: 3	Calculated: -	Data type: Unsigned32
	Can be changed: -	Scaling: -	Dyn. index: -
	Unit group: -	Unit selection: -	Func. diagram: -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the identifier (client/server and server/client) of the SDO channel.

Index:
[0] = COB-ID from the client to the server
[1] = COB-ID from the server to the client

Note: Corresponds to the CANopen object 1200 hex.

SDO: Service Data Object

p8611[0...82] CAN Pre-defined Error Field / Pre_def err field

CU230P-2_CAN	Access level: 3	Calculated: -	Data type: Unsigned32
	Can be changed: U, T	Scaling: -	Dyn. index: -
	Unit group: -	Unit selection: -	Func. diagram: -
	Min	**Max**	**Factory setting**
	0000 hex	FFFF 1000 hex	0000 hex

Description: Displays the Pre-defined Error Field of the CAN node.

It includes the number of all errors that have occurred, the number of errors that have occurred for each drive and the errors according to their history.

The first 16 bits represent the CANopen error code and the second 16 bits the SINAMICS error code.

Index 1 has the same structure - however, the drive object ID is in the second 16 bits instead of the SINAMICS error code.

CANopen error code:

0000 hex: No error present.

8110 hex: Alarm A08751 present.

8120 hex: Alarm A08752 present.

8130 hex: Alarm A08700(F) with alarm value = 2 present.

1000 hex: Generic error 1 present (there is at least one fault outside the range 8700 ... 8799)

1001 hex: Generic error 2 present (there is at least one alarm in the range 8700 ... 8799 with the exception of A08751, A08752, A08700)

All drive objects are acknowledged by writing the value 0 to index 0. As soon as a fault has been acknowledged or an alarm cleared, then it is also cleared from the fault list.

Index:
[0] = Number of all faults in the drive unit
[1] = Most recent drive number / fault number
[2] = Number of faults drive 1
[3] = Fault 1/ drive 1
[4] = Fault 2/ drive 1
[5] = Fault 3/ drive 1
[6] = Fault 4/ drive 1

[7] = Fault 5/ drive 1
[8] = Fault 6/ drive 1

Note: Corresponds to the CANopen object 1003 hex.

p8620 CAN Node-ID / Node ID

CU230P-2_CAN			
	Access level: 2	**Calculated:** -	**Data type:** Unsigned8
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	1	127	126

Description: Display or setting of the CANopen Node ID.

The Node ID can be set as follows:

1) Using the address switch on the Control Unit.

--> p8620 can then only be read and displays the selected Node ID.

--> A change only becomes effective after a POWER ON.

--> CANopen Node ID and PROFIBUS address are identical.

2) Using p8620

--> Only if address 0 is set using the address switch.

--> the Node ID is set as standard to 126.

--> A change only becomes effective after save and POWER ON.

Dependency: Refer to: r8621

Note: Every node ID change only becomes effective after a POWER ON.

The active node ID is displayed in r8621.

The parameter is not influenced by setting the factory setting.

It is only possible to independently set CANopen node ID and the PROFIBUS address using p0918 and p8620 (prerequisite: the address 0 is set for the address switch).

r8621 CAN Node-ID active / Node ID active

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned8
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the active CANopen Node ID.

Dependency: Refer to: p8620

p8622 CAN bit rate / Bit rate

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	7	6

Description: Setting the bit rate for the CAN bus.

The appropriate bit timings are selected that are defined in p8623 in the associated sub-index.

Example:

Bit rate = 20 kbit/s --> p8622 = 6 --> associated bit timing is in p8623[6].

Value:
0: 1 Mbit/s
1: 800 kbit/s
2: 500 kbit/s
3: 250 kbit/s
4: 125 kbit/s
5: 50 kbit/s
6: 20 kbit/s
7: 10 kbit/s

Dependency: Refer to: p8623

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

p8623[0...7] CAN Bit Timing selection / Bit timing select

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0000 hex	000F 7FFF hex	[0] 1405 hex [1] 1605 hex [2] 1C05 hex [3] 1C0B hex [4] 1C17 hex [5] 1C3B hex [6] 0002 1C15 hex [7] 0004 1C2B hex

Description: Sets the bit timing for the C_CAN controller to the associated and selected bit rate (p8622).

Bits are distributed to the following parameters of the C_CAN controller in p8623[0...7]:

Bit 0 ... 5: BRP (Baud Rate Prescaler)

Bit 6 ... 7: SJW (Synchronization Jump Width)

Bit 8 ... 11: TSEG1 (Time Segment 1, before the sampling point)

Bit 12 ... 14: TSEG2 (Time Segment 2, after the sampling point)

Bit 15: Reserved

Bit 16 ... 19: BRPE (Baud Rate Prescaler Extension)

Bit 20 ... 31: Reserved

Example:

Bit rate = 20 kbit/s --> p8622 = 6 --> associated bit timing is in p8623[6] --> 0001 2FB6

Recommendation: Use the factory setting when setting the bit timing.

Index:
[0] = 1 Mbit/s
[1] = 800 kbit/s
[2] = 500 kbit/s
[3] = 250 kbit/s
[4] = 125 kbit/s
[5] = 50 kbit/s
[6] = 20 kbit/s
[7] = 10 kbit/s

Dependency: Refer to: p8622

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

p8630[0...2] CAN virtual objects / Virtual objects

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	65535	0

Description: Activating access to parameters via manufacturer-specific CANopen objects and setting for the subindex area (index 1) and the parameter area (index 2) when using virtual objects.

This means that it is possible to access all SINAMICS parameters via CAN.

Index 0:

0: Not possible to access virtual CANopen objects

1: Possible to access virtual CANopen objects

Index 1 (sub-index area):

0: 0 ... 255

1: 256 ... 511

2: 512 ... 767

3: 768 ... 1023

Index 2 (parameter area):
0: 1 ... 9999
1: 10000 ... 19999
2: 20000 ... 29999
3: 30000 ... 39999

Index: [0] = Drive object number
[1] = Sub-index range
[2] = Parameter range

p8641 CAN Abort Connection Option Code / Abort con opt code

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	3	3

Description: Sets the drive behavior if a CAN communication error occurs.

Value:
0: No response
1: OFF1
2: OFF2
3: OFF3

Dependency: Refer to: F08700

r8680[0...36] CAN Diagnosis Hardware / Diagnostics HW

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the register of the CAN controller C_CAN:

Register, Message Interface Register and Message Handler Register - referred to the CAN protocol.

Index:
[0] = Control register
[1] = Status register
[2] = Error counter
[3] = Bit timing register
[4] = Interrupt register
[5] = Test register
[6] = Baud rate prescaler extension register
[7] = Interface 1 command request register
[8] = Interface 1 command mask register

Note: A description of the individual registers of the C_CAN controller can be taken from "C_CAN User's Manual".

p8684 CAN NMT state after booting / NMT state aft boot

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	4	127	127

Description: Sets the CANopen NMT state that is effective after booting.

Value:
4: Stopped
5: Operational
127: Pre-operational

Dependency: Refer to: p8685

Note: Booting in the NMT state pre-operational corresponds to the CANopen standard

p8685 CAN NMT states / NMT states

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	129	127

Description: Sets and displays the CANopen NMT state.

Value:
0: Initialization
4: Stopped
5: Operational
127: Pre-operational
128: Reset node
129: Reset Communication

Note: The value 0 (initialization) is only displayed and cannot be set.

p8699 CAN: RPDO monitoring time / RPDO t_monit

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0 [ms]	65535000 [ms]	0 [ms]

Description: Sets the monitoring time for the process data received via the CAN bus.

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

If no process data is received within this time, then fault F08702 is output.

Dependency: Refer to: F08702

Note: Value = 0: Monitoring is deactivated.

p2048: CANopen sampling time

p8700[0...1] CAN Receive PDO 1 / Receive PDO 1

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9204, 9206
	Min	**Max**	**Factory setting**
	0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 1 (RPDO 1).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1400 hex.

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

p8701[0...1] CAN Receive PDO 2 / Receive PDO 2

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9204, 9206
	Min	**Max**	**Factory setting**
	0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 2 (RPDO 2).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1401 hex.

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

p8702[0...1] CAN Receive PDO 3 / Receive PDO 3

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9204, 9206
Min	**Max**	**Factory setting**
0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 3 (RPDO 3).

Index: [0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1402 hex.

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

p8703[0...1] CAN Receive PDO 4 / Receive PDO 4

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9204, 9206
Min	**Max**	**Factory setting**
0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 4 (RPDO 4).

Index: [0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1403 hex.

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

p8704[0...1] CAN Receive PDO 5 / Receive PDO 5

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9204
Min	**Max**	**Factory setting**
0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 5 (RPDO 5).

Index: [0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1404 hex.

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

p8705[0...1] CAN Receive PDO 6 / Receive PDO 6

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9204
	Min	**Max**	**Factory setting**
	0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 6 (RPDO 6).

Index: [0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1405 hex.
Transmission types 0, 1, FE and FF can be set.
PDO: Process Data Object

p8706[0...1] CAN Receive PDO 7 / Receive PDO 7

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9204
	Min	**Max**	**Factory setting**
	0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 7 (RPDO 7).

Index: [0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1406 hex.
Transmission types 0, 1, FE and FF can be set.
PDO: Process Data Object

p8707[0...1] CAN Receive PDO 8 / Receive PDO 8

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9204
	Min	**Max**	**Factory setting**
	0000 hex	8000 06DF hex	[0] 8000 06DF hex [1] 00FE hex

Description: Sets the communication parameters for CANopen Receive Process Data Object 8 (RPDO 8).

Index: [0] = PDO COB-ID
[1] = PDO transmission type

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Note: Corresponds to the CANopen object 1407 hex.
Transmission types 0, 1, FE and FF can be set.
PDO: Process Data Object

p8710[0...3] CAN Receive Mapping for RPDO 1 / Mapping RPDO 1

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9204, 9206
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 1 (RPDO 1).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1600 hex.

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8711[0...3] CAN Receive Mapping for RPDO 2 / Mapping RPDO 2

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9204, 9206
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 2 (RPDO 2).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1601 hex.

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8712[0...3] CAN Receive Mapping for RPDO 3 / Mapping RPDO 3

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9204, 9206
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 3 (RPDO 3).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1602 hex.

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8713[0...3] CAN Receive Mapping for RPDO 4 / Mapping RPDO 4

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9204, 9206
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 4 (RPDO 4).

Index:
[0] = Mapped object 1
[1] = Mapped object 2

[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1603 hex.
Dummy mapping not supported.
The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8714[0...3] CAN Receive Mapping for RPDO 5 / Mapping RPDO 5

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9204
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 5 (RPDO 5).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1604 hex.
Dummy mapping not supported.
The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8715[0...3] CAN Receive Mapping for RPDO 6 / Mapping RPDO 6

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9204
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 6 (RPDO 6).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1605 hex.
Dummy mapping not supported.
The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8716[0...3] CAN Receive Mapping for RPDO 7 / Mapping RPDO 7

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9204
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 7 (RPDO 7).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1606 hex.
Dummy mapping not supported.
The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8717[0...3] CAN Receive Mapping for RPDO 8 / Mapping RPDO 8

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9204
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Receive Process Data Object 8 (RPDO 8).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1607 hex.

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

p8720[0...4] CAN Transmit PDO 1 / Transmit PDO 1

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9208, 9210
Min	**Max**	**Factory setting**
0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 1 (TPDO 1).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1800 hex.

Transmission types 0, 1 ... F0, FE and FF can be set.

p2048: CANopen sampling time

PDO: Process Data Object

p8721[0...4] CAN Transmit PDO 2 / Transmit PDO 2

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9208, 9210
Min	**Max**	**Factory setting**
0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 2 (TPDO 2).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1801 hex.

Transmission types 0, 1 ... F0, FE and FF can be set.

p2048: CANopen sampling time

PDO: Process Data Object

p8722[0...4] CAN Transmit PDO 3 / Transmit PDO 3

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9208, 9210
Min	**Max**	**Factory setting**
0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 3 (TPDO 3).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1802 hex.

Transmission types 0, 1 ... F0, FE and FF can be set.

p2048: CANopen sampling time

PDO: Process Data Object

p8723[0...4] CAN Transmit PDO 4 / Transmit PDO 4

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9208, 9210
Min	**Max**	**Factory setting**
0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 4 (TPDO 4).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1803 hex.

Transmission types 0, 1 ... F0, FE and FF can be set.

p2048: CANopen sampling time

PDO: Process Data Object

p8724[0...4] CAN Transmit PDO 5 / Transmit PDO 5

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9208
	Min	**Max**	**Factory setting**
	0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 5 (TPDO 5).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1804 hex.

Transmission types 0, 1 ... F0, FE and FF can be set.

p2048: CANopen sampling time

PDO: Process Data Object

p8725[0...4] CAN Transmit PDO 6 / Transmit PDO 6

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9208
	Min	**Max**	**Factory setting**
	0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 6 (TPDO 6).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:

A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1805 hex.

Transmission types 0, 1 ... F0, FE and FF can be set.

p2048: CANopen sampling time

PDO: Process Data Object

p8726[0...4] CAN Transmit PDO 7 / Transmit PDO 7

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9208
	Min	**Max**	**Factory setting**
	0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 7 (TPDO 7).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:
A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1806 hex.
Transmission types 0, 1 ... F0, FE and FF can be set.
p2048: CANopen sampling time
PDO: Process Data Object

p8727[0...4] CAN Transmit PDO 8 / Transmit PDO 8

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9208
	Min	**Max**	**Factory setting**
	0000 hex	C000 06DF hex	[0] C000 06DF hex [1] 00FE hex [2] 0000 hex [3] 0000 hex [4] 0000 hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 8 (TPDO 8).

Index:
[0] = PDO COB-ID
[1] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[3] = Reserved
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.

Notice: For inhibit time and event timer, the following apply:
A value that is not a multiple integer of the CANopen sampling time is rounded-off.

Note: Corresponds to the CANopen object 1807 hex.
Transmission types 0, 1 ... F0, FE and FF can be set.
p2048: CANopen sampling time
PDO: Process Data Object

p8730[0...3] CAN Transmit Mapping for TPDO 1 / Mapping TPDO 1

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9208, 9210
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 1 (TPDO 1).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A00 hex.

The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8731[0...3] CAN Transmit Mapping for TPDO 2 / Mapping TPDO 2

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9208, 9210
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 2 (TPDO 2).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A01 hex.

The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8732[0...3] CAN Transmit Mapping for TPDO 3 / Mapping TPDO 3

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9208, 9210
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 3 (TPDO 3).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A02 hex.

The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8733[0...3] CAN Transmit Mapping for TPDO 4 / Mapping TPDO 4

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9208, 9210
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 4 (TPDO 4).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A03 hex.
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8734[0...3] CAN Transmit Mapping for TPDO 5 / Mapping TPDO 5

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9208
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 5 (TPDO 5).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A04 hex.
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8735[0...3] CAN Transmit Mapping for TPDO 6 / Mapping TPDO 6

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9208
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 6 (TPDO 6).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A05 hex.
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8736[0...3] CAN Transmit Mapping for TPDO 7 / Mapping TPDO 7

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9208
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 7 (TPDO 7).

Index:
[0] = Mapped object 1
[1] = Mapped object 2
[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A06 hex.
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8737[0...3] CAN Transmit Mapping for TPDO 8 / Mapping TPDO 8

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9208
	Min	**Max**	**Factory setting**
	0000 hex	FFFF FFFF hex	0000 hex

Description: Sets the mapping parameters for CANopen Transmit Process Data Object 8 (TPDO 8).

Index:
[0] = Mapped object 1
[1] = Mapped object 2

[2] = Mapped object 3
[3] = Mapped object 4

Note: Corresponds to the CANopen object 1A07 hex.

The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8744 CAN PDO mapping configuration / PDO Mapping config

CU230P-2_CAN

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: C, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9204, 9206, 9208, 9210
Min	**Max**	**Factory setting**
1	2	2

Description: Selector switch for the PDO mapping.

Value:
1: Predefined Connection Set
2: Free PDO Mapping

r8745[0...15] CO: CAN free PZD receive objects 16 bit / Free PZD recv 16

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** 4000H	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Access to free PZD receive objects 16 bit using the SDO transfer.

An index can only be used, if the corresponding object has not been mapped in a PDO.

Index:
[0] = PZD object 0
[1] = PZD object 1
[2] = PZD object 2
[3] = PZD object 3
[4] = PZD object 4
[5] = PZD object 5
[6] = PZD object 6
[7] = PZD object 7
[8] = PZD object 8
[9] = PZD object 9
[10] = PZD object 10
[11] = PZD object 11
[12] = PZD object 12
[13] = PZD object 13
[14] = PZD object 14
[15] = PZD object 15

Note:
Index 0 corresponds to the CANopen object 5800 hex

Index 1 corresponds to the CANopen object 5801 hex

Index 2 corresponds to the CANopen object 5802 hex

Index 3 corresponds to the CANopen object 5803 hex

Index 4 corresponds to the CANopen object 5804 hex

Index 5 corresponds to the CANopen object 5805 hex

Index 6 corresponds to the CANopen object 5806 hex

Index 7 corresponds to the CANopen object 5807 hex

Index 8 corresponds to the CANopen object 5808 hex

Index 9 corresponds to the CANopen object 5809 hex

Index 10 corresponds to the CANopen object 580A hex

Index 11 corresponds to the CANopen object 580B hex

Index 12 corresponds to the CANopen object 580C hex

Index 13 corresponds to the CANopen object 580D hex

Index 14 corresponds to the CANopen object 580E hex

Index 15 corresponds to the CANopen object 580F hex

p8746[0...15] CI: CAN free PZD send objects 16 bit / Free PZD send 16

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** U32 / Integer16
	Can be changed: U, T	**Scaling:** 4000H	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for free PZD send objects 16 bit for SDO transfer.

An index can only be used, if the corresponding object has not been mapped in a PDO.

Index:
[0] = PZD object 0
[1] = PZD object 1
[2] = PZD object 2
[3] = PZD object 3
[4] = PZD object 4
[5] = PZD object 5
[6] = PZD object 6
[7] = PZD object 7
[8] = PZD object 8
[9] = PZD object 9
[10] = PZD object 10
[11] = PZD object 11
[12] = PZD object 12
[13] = PZD object 13
[14] = PZD object 14
[15] = PZD object 15

Note:
Index 0 corresponds to the CANopen object 5810 hex
Index 1 corresponds to the CANopen object 5811 hex
Index 2 corresponds to the CANopen object 5812 hex
Index 3 corresponds to the CANopen object 5813 hex
Index 4 corresponds to the CANopen object 5814 hex
Index 5 corresponds to the CANopen object 5815 hex
Index 6 corresponds to the CANopen object 5816 hex
Index 7 corresponds to the CANopen object 5817 hex
Index 8 corresponds to the CANopen object 5818 hex
Index 9 corresponds to the CANopen object 5819 hex
Index 10 corresponds to the CANopen object 581A hex
Index 11 corresponds to the CANopen object 581B hex
Index 12 corresponds to the CANopen object 581C hex
Index 13 corresponds to the CANopen object 581D hex
Index 14 corresponds to the CANopen object 581E hex
Index 15 corresponds to the CANopen object 581F hex

r8747[0...7] CO: CAN free PZD receive objects 32 bit / Free PZD recv 32

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Integer32
	Can be changed: -	**Scaling:** 4000H	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Access to free PZD receive objects 32 bit using the SDO transfer.

An index can only be used, if the corresponding object has not been mapped in a PDO.

Index:
[0] = PZD object 0
[1] = PZD object 1
[2] = PZD object 2
[3] = PZD object 3
[4] = PZD object 4
[5] = PZD object 5
[6] = PZD object 6
[7] = PZD object 7

Note: Index 0 corresponds to the CANopen object 5820 hex
Index 1 corresponds to the CANopen object 5821 hex
Index 2 corresponds to the CANopen object 5822 hex
Index 3 corresponds to the CANopen object 5823 hex
Index 4 corresponds to the CANopen object 5824 hex
Index 5 corresponds to the CANopen object 5825 hex
Index 6 corresponds to the CANopen object 5826 hex
Index 7 corresponds to the CANopen object 5827 hex

p8748[0...7] CI: CAN free PZD send objects 32 bit / Free PZD send 32

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** U32 / Integer32
Can be changed: U, T	**Scaling:** 4000H	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for free PZD send objects 32 bit for SDO transfer.
An index can only be used, if the corresponding object has not been mapped in a PDO.

Index: [0] = PZD object 0
[1] = PZD object 1
[2] = PZD object 2
[3] = PZD object 3
[4] = PZD object 4
[5] = PZD object 5
[6] = PZD object 6
[7] = PZD object 7

Note: Index 0 corresponds to the CANopen object 5830 hex
Index 1 corresponds to the CANopen object 5831 hex
Index 2 corresponds to the CANopen object 5832 hex
Index 3 corresponds to the CANopen object 5833 hex
Index 4 corresponds to the CANopen object 5834 hex
Index 5 corresponds to the CANopen object 5835 hex
Index 6 corresponds to the CANopen object 5836 hex
Index 7 corresponds to the CANopen object 5837 hex

r8750[0...15] CAN mapped 16-bit receive objects / RPDO 16 mapped

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the mapped 16-bit receive CANopen objects in the process data buffer.
Example:
If, e.g. the control word is mapped in an RPDO, then r8750 indicates the position of the control word in the process data buffer.

Index: [0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[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...15] = Reserved

r8751[0...15] CAN mapped 16-bit transmit objects / TPDO 16 mapped

CU230P-2_CAN	Access level: 3	Calculated: -	Data type: Unsigned16
	Can be changed: -	Scaling: -	Dyn. index: -
	Unit group: -	Unit selection: -	Func. diagram: -
	Min	Max	Factory setting
	-	-	-

Description: Displays mapped 16-bit transmit CANopen objects in the process data buffer.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[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...15] = Reserved

Dependency: Refer to: r8750

r8760[0...14] CAN mapped 32-bit receive objects / RPDO 32 mapped

CU230P-2_CAN	Access level: 3	Calculated: -	Data type: Unsigned16
	Can be changed: -	Scaling: -	Dyn. index: -
	Unit group: -	Unit selection: -	Func. diagram: -
	Min	Max	Factory setting
	-	-	-

Description: Displays the mapped 32-bit receive CANopen objects in the process data buffer.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11...14] = Reserved

r8761[0...14] CAN mapped 32-bit transmit objects / TPDO 32 mapped

CU230P-2_CAN	Access level: 3	Calculated: -	Data type: Unsigned16
	Can be changed: -	Scaling: -	Dyn. index: -
	Unit group: -	Unit selection: -	Func. diagram: -
	Min	Max	Factory setting
	-	-	-

Description: Displays mapped 32-bit transmit CANopen objects in the process data buffer.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10

[9] = PZD 10 + 11
[10] = PZD 11 + 12
[11...14] = Reserved

r8762 CO: CAN operating mode display / Op mode display

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the currently effective CANopen operating mode.

To send the CANopen object 0x6061 mapped in a TPDO, this parameter can be correspondingly interconnected in the PZD interface.

r8784 CO: CAN status word / Status word

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9226
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output for the CANopen status word

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Ready for switching on	Yes	No	-
01	Ready	Yes	No	-
02	Operation enabled	Yes	No	-
03	Fault present	Yes	No	-
04	No coasting active	Yes	No	-
05	No Quick Stop active	Yes	No	-
06	Switching on inhibited active	Yes	No	-
07	Alarm present	Yes	No	-
08	Can be freely interconnected (BI: p8785)	Yes	No	-
09	Control request	Yes	No	-
10	Target reached	Yes	No	-
11	Torque limit reached	Yes	No	-
12	Velocity equal to zero	Yes	No	-
14	Can be freely interconnected (BI: p8786)	Yes	No	-
15	Can be freely interconnected (BI: p8787)	Yes	No	-

Note: Corresponds to CANopen object 6041 hex.

For bit 10:

When the ramp-function generator is activated, the interconnection from CI: p2151 = r1119 can be changed, so that to evaluate bit 10, the setpoint can be retrieved (taken) from in front of the ramp-function generator.

For bit 10, 12:

When braking, the two bits must indicate the same state. This is the reason that the following parameters must be set the same:

p2161 (speed threshold value 3, for r2199.0) = p2163 (speed threshold value 4, for r2197.7)

p2150 (hysteresis speed 3, for r2199.0) = p2164 (hysteresis speed 4, for r2197.7)

p8785 BI: CAN status word bit 8 / Status word bit 8

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 9226
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for bit 8 of the CANopen status word.

Dependency: Refer to: r8784

p8786 BI: CAN status word bit 14 / Status word bit 14

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9226
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for bit 14 of the CANopen status word.

Dependency: Refer to: r8784

p8787 BI: CAN status word bit 15 / Status word bit 15

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 9226
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for bit 15 of the CANopen status word.

Dependency: Refer to: r8784

p8790 CAN control word - auto interconnection / STW interc auto

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	1	0

Description: Sets the automatic BICO interconnection of the CANopen control word.

Value:
0: No interconnection
1: Interconnection

Dependency: Refer to: r2050, r2090, r2091, r2092, r2093, r8750, r8795

Note: The following BICO interconnections are automatically established if the CANopen control word is mapped at one of the locations x = 0 ... 3 in the receive process data buffer.

BI: p0840.0 = r209x.0

BI: p0844.0 = r209x.1

BI: p0848.0 = r209x.2

BI: p0852.0 = r209x.3

BI: p2103.0 = r209x.7

The write access is rejected if a CANopen control word is not mapped at one of these locations.

This also causes the project download of the commissioning software to be canceled.

p8791 CAN stop option code / Stop opt_code

CU230P-2_CAN			
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: C(3), T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-1	3	-1

Description: Setting for the CANopen control word bit 8 "Stop" (CANopen STW.8).

Value:
-1: No interconnection
1: Interconnection CANopen STW.8 with p1142
3: Interconnection CANopen STW.8 with p1140

Dependency: Refer to: r2050, r8750, r8795

Note: Corresponds to CANopen object 605D hex.

The BICO interconnection is established, if the CANopen control word is mapped at one of the locations x = 0 ... 3 in the receive process data buffer.

r8792[0] CO: CAN velocity mode I16 setpoint / Vel mod I16 set

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: -	**Scaling:** 4000H	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display and connector output to interconnect standardized I16 setpoint CANopen objects of the velocity mode for SDO transfer.

An index can only be used, if the corresponding object has not been mapped in a PDO.

Index: [0] = VL Target Velocity

Note: For index 0:

Corresponds to the CANopen object 6042 hex.

The displayed parameter value is scaled via the reference speed p2000:

4000 hex corresponds to p2000

r8795.0...15 CO/BO: CAN control word / Control word

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Access to the CANopen control word using SDO transfer.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	ON/OFF1	Yes	No	-
01	Do not activate coast down	Yes	No	-
02	Do not activate a Quick Stop	Yes	No	-
03	Enable operation	Yes	No	-
04	Enable ramp-function generator	Yes	No	-
05	Continue ramp-function generator	Yes	No (freeze)	-
06	Enable speed setpoint	Yes	No	-
07	Acknowledge fault	Yes	No	-
08	Stop	Yes	No	-
11	Freely interconnectable	Yes	No	-
12	Freely interconnectable	Yes	No	-
13	Freely interconnectable	Yes	No	-
14	Freely interconnectable	Yes	No	-
15	Freely interconnectable	Yes	No	-

Dependency: Refer to: p8790

Note: Corresponds to the CANopen object 6040 hex.

r8796[0] CO: CAN profile velocity mode I32 setpoints / Pr vel mo I32 set

CU230P-2_CAN	**Access level:** 3	**Calculated:** -	**Data type:** Integer32
	Can be changed: -	**Scaling:** 4000H	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display and connector output to interconnect standardized I32 setpoint CANopen objects of the profile velocity mode for SDO transfer.

An index can only be used, if the corresponding object has not been mapped in a PDO.

Index: [0] = Target velocity

Note: For index 0:

Corresponds to the CANopen object 60FF hex.

The displayed parameter value is scaled via the reference speed p2000:

4000 0000 hex corresponds to p2000

r8797[0] CO: CAN profile torque mode I16 setpoints / Pr Tq mod I16 set

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** 4000H	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Display and connector output to interconnect standardized I16 setpoint CANopen objects of the profile torque mode for SDO transfer.

An index can only be used, if the corresponding object has not been mapped in a PDO.

Index: [0] = Target torque

Note: For index 0:

Corresponds to the CANopen object 6071 hex.

The displayed parameter value is scaled via the reference torque p2003:

4000 hex corresponds to p2003

p8798[0...1] CAN speed conversion factor / n_conv_factor

CU230P-2_CAN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
1	4294967295	1

Description: The factor converts the required velocity units into the internal velocity units (U/s).

With the factory setting, for CANopen, the velocity units are increments/second.

The parameter corresponds to the CANopen object 6094 hex.

The internal velocity is calculated as follows:

n_set_internal = object 6094.1 / object 6094.2 * 1/(p0408 * 2^p0418) * n_set_bus

Index:
[0] = Numerator
[1] = Denominator

p8805 Identification and maintenance 4 configuration / I&M 4 config

CU230P-2_PN

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

Description: Sets the configuration for the content of identification and maintenance 4 (I&M 4, p8809).

Value:
0: Standard value for I&M 4 (p8809)
1: User value for I&M 4 (p8809)

Dependency: For p8805 = 0, if the user writes at least one value in p8809[0...53], then p8805 is automatically set to = 1.

When p8805 is reset = 0, then the content of the factory setting is set in p8809.

Note: For p8805 = 0:

PROFINET I&M 4 (p8809) contains the information for the SI change tracking.

For p8805 = 1:

PROFINET I&M 4 (p8809) contains the values written by the user.

p8806[0...53] Identification and Maintenance 1 / I&M 1

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	

Description: Parameters for the PROFINET data set "Identification and Maintenance 1" (I&M 1).

This information is known as "System identifier" and "Location identifier".

Dependency: Refer to: p8807, p8808

Notice: Only characters belonging to the standard ASCII character set may be used (32 dec to 126 dec).

Note: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
For p8806[0...31]:
System identifier.
For p8806[32...53]:
Location identifier.

p8807[0...15] Identification and Maintenance 2 / I&M 2

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	

Description: Parameters for the PROFINET data set "Identification and Maintenance 2" (I&M 2).
This information is known as "Installation date".

Dependency: Refer to: p8806, p8808

Note: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
For p8807[0...15]:
Dates of installation or first commissioning of the device with the following format options (ASCII):
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 ':'.

p8808[0...53] Identification and Maintenance 3 / I&M 3

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	

Description: Parameters for the PROFINET data set "Identification and Maintenance 3" (I&M 3).
This information is known as "Supplementary information".

Dependency: Refer to: p8806, 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.
For p8808[0...53]:
Any supplementary information and comments (ASCII).

p8809[0...53] Identification and Maintenance 4 / I&M 4

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

For p8809[0...3]:

Contains the value from r9781[0] "SI change tracking checksum functional".

For p8809[4...7]:

Contains the value from r9782[0] "SI change tracking time stamp checksum functional".

For p8809[8...53]:

Reserved.

r8854 PROFINET state / PN state

CU230P-2_PN	**Access level:** 4	**Calculated:** -	**Data type:** Integer16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0	255	-

Description: State display for PROFINET.

Value:
0: No initialization
1: Fatal fault
2: Initialization
3: Send configuration
4: Receive configuration
5: Non-cyclic communication
6: Cyclic communications but no setpoints (stop/no clock cycle)
255: Cyclic communication

r8858[0...39] PROFINET read diagnostics channel / PN diag_chan read

CU230P-2_PN	**Access level:** 4	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the PROFINET diagnostics data.

Note: Only for internal Siemens diagnostics.

r8859[0...7] PROFINET identification data / PN ident data

CU230P-2_PN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

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 of June
r8859[7] = 1700 --> second part, firmware version (complete version: V13.00.17.00)

r8909 PN device ID / PN device ID

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the PROFINET Device ID.
Every SINAMICS device type has its own PROFINET Device ID and its own PROFINET GSD.

Note: List of the SINAMICS Device IDs:
0501 hex: S120/S150
0504 hex: G130/G150
050A hex: DC MASTER
050C hex: MV
050F hex: G120P
0510 hex: G120C
0511 hex: G120 CU240E-2
0512 hex: G120D
0513 hex: G120 CU250S-2 Vector
0514 hex: G110M

p8920[0...239] PN Name of Station / PN Name Stat

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Sets the station name for the onboard PROFINET interface on the Control Unit.
The actual station name is displayed in r8930.

Dependency: Refer to: p8925, 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 / PN IP addr

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the IP address for the onboard PROFINET interface on the Control Unit.
The actual IP address is displayed in r8931.

Dependency: Refer to: p8925, 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 / PN Def Gateway

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the default gateway for the onboard PROFINET interface on the Control Unit.

The actual standard gateway is displayed in r8932.

Dependency: Refer to: p8925, 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 / PN Subnet Mask

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	255	0

Description: Sets the subnet mask for the onboard PROFINET interface on the Control Unit.

The actual subnet mask is displayed in r8933.

Dependency: Refer to: p8925, r8933

Note: The interface configuration (p8920 and following) is activated with p8925.

The parameter is not influenced by setting the factory setting.

p8924 PN DHCP Mode / PN DHCP mode

CU230P-2_PN

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

Description: Sets the DHCP mode for the onboard PROFINET interface on the Control Unit.

The actual DHCP mode is displayed in r8934.

Value:
0: DHCP off
2: DHCP on, identification using MAC address
3: DHCP on, identification via name of station

Dependency: Refer to: p8925, r8934

Notice: When the DHCP mode is active (p8924 not equal to 0), then PROFINET communication via this interface is no longer possible! However, the interface can be used by the STARTER/SCOUT commissioning tool.

Note: The 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.

p8925 Activate PN interface configuration / PN IF config

CU230P-2_PN

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

Description: 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.

Value: 0: No function
1: Reserved
2: Activate and save configuration
3: Delete configuration

Dependency: Refer to: p8920, p8921, p8922, p8923, p8924

Notice: 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.

Note: For p8925 = 2:

The interface configuration (p8920 and following) is saved and activated after the next POWER ON.

For p8925 = 3:

The factory setting of the interface configuration is loaded after the next POWER ON.

r8930[0...239] PN Name of Station actual / PN Name Stat act

CU230P-2_PN

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

Description: Displays the actual station name for the onboard PROFINET interface on the Control Unit.

r8931[0...3] PN IP address actual / PN IP addr act

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the actual IP address for the onboard PROFINET interface on the Control Unit.

r8932[0...3] PN Default Gateway actual / PN Def Gateway act

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the actual default gateway for the onboard PROFINET interface on the Control Unit.

r8933[0...3] PN Subnet Mask actual / PN Subnet Mask act

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	255	-

Description: Displays the actual subnet mask for the onboard PROFINET interface on the Control Unit.

r8934 PN DHCP Mode actual / PN DHCP Mode act

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	3	-

Description: Displays the actual DHCP mode for the onboard PROFINET interface on the Control Unit.

Value: 0: DHCP off
2: DHCP on, identification using MAC address
3: DHCP on, identification via name of station

Notice: When the DHCP mode is active (parameter value not equal to 0), PROFINET communication via this interface is no longer possible! However, the interface can be used for commissioning tool such as STARTER or SCOUT.

r8935[0...5] PN MAC address / PN MAC addr

CU230P-2_PN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned8
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	0000 hex	00FF hex	-

Description: Displays the MAC address for the onboard PROFINET interface on the Control Unit.

r8939 PN DAP ID / PN DAP ID

CU230P-2_PN	**Access level:** 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** -
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays the PROFINET Device Access Point ID (DAP ID) for the onboard PROFINET interface.

The combination of device ID (r8909) and DAP ID uniquely identifies a PROFINET access point.

Note: List of the SINAMICS DAP IDs:

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

p8980 Ethernet/IP profile / Eth/IP profile

CU230P-2_PN	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2473
	Min	**Max**	**Factory setting**
	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

p8981 Ethernet/IP ODVA STOP mode / Eth/IP ODVA STOP

CU230P-2_PN	**Access level:** 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2473
	Min	**Max**	**Factory setting**
	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.

p8982 Ethernet/IP ODVA speed scaling / Eth/IP ODVA n scal

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

p8983 Ethernet/IP ODVA torque scaling / Eth/IP ODVA M scal

CU230P-2_PN

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

p8991 USB memory access / USB mem acc

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

p8999 USB functionality / USB Fct

Access level: 4	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
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.

p9400 Safely remove memory card / Mem_card rem

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	100	0

Description: Setting and display when memory card is "removed safely".

Procedure:

Setting p9400 = 2 results in a value of 3

--> The memory card can be removed safely. After removal the value sets itself to 0 automatically.

Setting p9400 = 2 results in a value of 100

--> The memory card cannot be removed safely. Removal may destroy the file system on the memory card. It may be necessary to set p9400 = 2 again.

Value:
0: No memory card inserted
1: Memory card inserted
2: Request "safe removal" of the memory card
3: "Safe removal" possible
100: "Safe removal" not possible due to access

Dependency: Refer to: r9401

Notice: 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.

Note: The status when the memory card is being "removed safely" is shown in r9401.

For value = 0, 1, 3, 100:

These values can only be displayed, not set.

r9401.0...3 CO/BO: Safely remove memory card status / Mem_card rem stat

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

Description: Displays the status of the memory card.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
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	-

Dependency: Refer to: p9400

Note: For 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).

For 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.

r9406[0...19] PS file parameter number parameter not transferred / PS par_no n transf

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

Description: Displays the parameters that were not able to be transferred when reading the parameter back-up files (PS files) from the non-volatile memory (e.g. memory card).

r9406[0] = 0

--> All of the parameter values were able to be transferred error-free.

r9406[0...x] > 0

--> indicates the parameter number in the following cases:

- parameter, whose value was not able to be completely accepted.

- indexed parameter, where at least 1 index was not able to be accepted. The first index that is not transferred is displayed in r9407.

Dependency: Refer to: r9407, r9408

Note: All indices from r9406 to r9408 designate the same parameter.

r9406[x] parameter number, parameter not accepted

r9407[x] parameter index, parameter not accepted

r9408[x] fault code, parameter not accepted

r9407[0...19] PS file parameter index parameter not transferred / PS parameter index

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

Description: Displays the first index of the parameters that could not be transferred when the parameter backup files (PS files) were read from the non-volatile memory (e.g. memory card).

If, from an indexed parameter, at least one index was not able to be transferred, then the parameter number is displayed in r9406[n] and the first index that was not transferred is displayed in r9407[n].

r9406[0] = 0

--> All of the parameter values were able to be transferred error-free.

r9406[n] > 0

--> Displays r9407[n] the first index of the parameter number r9406[n] that was not transferred.

Dependency: Refer to: r9406, r9408

Note: All indices from r9406 to r9408 designate the same parameter.

r9406[x] parameter number, parameter not accepted

r9407[x] parameter index, parameter not accepted

r9408[x] fault code, parameter not accepted

r9408[0...19] PS file fault code parameter not transferred / PS fault code

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

Description: Only for internal Siemens service purposes.

Dependency: Refer to: r9406, r9407

Note: All indices from r9406 to r9408 designate the same parameter.
r9406[x] parameter number, parameter not accepted
r9407[x] parameter index, parameter not accepted
r9408[x] fault code, parameter not accepted

r9409 Number of parameters to be saved / Qty par to save

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

Description: Displays the number of modified parameters and those that have still not be saved for this drive object.

Dependency: Refer to: p0971

Notice: Inherent to the system, the list of the parameters to be backed up is empty after the following actions:
- Download
- Warm restart
- Factory setting

In these cases, a new parameter backup must be initiated, which is then the starting point for the list of modified parameters.

Note: The modified parameters that still need to be saved are internally listed in r9410 ... r9419.

r9451[0...29] Units changeover adapted parameters / Unit_chngov par

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

Description: Displays the parameters whose parameter would have to be changed during a units changeover.

Dependency: Refer to: F07088

r9463 Actual macro / Actual macro

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	999999	-

Description: Displays the set valid macro.

Note: A value of 0 is displayed if a parameter set by a macro is changed.

p9484 BICO interconnections search signal source / BICO S_src srch

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	4294967295	0

Description: Sets the signal source (BO/CO parameter, BICO coded) to search in the signal sinks.

The signal source to be searched for is set in p9484 (BICO-coded) and the search result is specified using the number (r9485) and the first index (r9486).

Dependency: Refer to: r9485, r9486

r9485 BICO interconnections signal source search count / BICO S_src srchQty

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the number of BICO interconnections to the signal sink being searched for.

Dependency: Refer to: p9484, r9486

Note: The signal source to be searched is set in p9484 (BICO-coded).

The search result is contained in r9482 and r9483 and is specified by the count (r9485) and the first index (r9486).

r9486 BICO interconnections signal source search first index / BICO S_src srchIdx

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the first index of the signal source being searched for.

The signal source to be searched for is set in p9484 (BICO-coded) and the search result is specified using the number (r9485) and the first index (r9486).

Dependency: Refer to: p9484, r9485

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).

r9925[0...99] Firmware file incorrect / FW file incorr

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

Description: Displays the directory and name of the file whose status as shipped from the factory was identified as impermissible.

Dependency: Refer to: r9926

Refer to: A01016

Note: The directory and name of the file is displayed in the ASCII code.

r9926 Firmware check status / FW check status

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

Description: Displays the status when the firmware is checked when the system is booted.

0: Firmware not yet checked.

1: Check running.

2: Check successfully completed.

3: Check indicates an error.

Dependency: Refer to: r9925

Refer to: A01016

p9930[0...8] System logbook activation / SYSLOG activation

Access level: 4	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	255	0

Description: Only for service purposes.

Index:
[0] = System logbook stage (0: Not active)
[1] = COM2/COM1 (0: COM2, 1: COM1)
[2] = Activate file write (0: Not active)
[3] = Display time stamp (0: Not displayed)
[4...7] = Reserved
[8] = System logbook file size (stages, each 10 kB)

Notice: Before switching off 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 deactivated again before switching off the Control Unit (p9930[2] = 0) in order to ensure that the system logbook has been completely written to the file.

p9931[0...180] System logbook module selection / SYSLOG mod select.

Access level: 4	**Calculated:** -	**Data type:** Unsigned32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0000 hex	FFFF FFFF hex	0000 hex

Description: Only for service purposes.

p9932 Save system logbook EEPROM / SYSLOG EEPROM save

Access level: 4	**Calculated:** -	**Data type:** Unsigned8
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	255	0

Description: Only for service purposes.

r9935.0 BO: POWER ON delay signal / POWER ON t_delay

Access level: 4	**Calculated:** -	**Data type:** Unsigned8
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	-

Description: Display and binector output for a delay after POWER ON.

After switch-on, binector output r9935.0 is set with the start of the first sampling time and is again reset after approx. 100 ms.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	POWER ON delay signal	High	Low	-

r9975[0...7] System utilization measured / Sys util meas

Access level: 4	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the measured system utilization.

The higher the value displayed, the higher the system utilization.

Index:
[0] = Computing time utilization (min)
[1] = Computing time utilization (averaged)
[2] = Computing time utilization (max)
[3] = Largest total utilization (min)
[4] = Largest total utilization (averaged)
[5] = Largest total utilization (max)
[6] = Reserved
[7] = Reserved

Dependency: Refer to: F01054, F01205

Note: For 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).

r9999[0...99] Software error internal supplementary diagnostics / SW_err int diag

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

Description: Diagnostics parameter to display additional information for internal software errors.

Note: Only for internal Siemens troubleshooting.

p11000 BI: Free tec_ctrl 0 enable / Ftec0 enab

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to switch in/switch out the free technology controller 0.

1 signal: The technology controller is switched in.

0 signal: The technology controller is switched out.

p11026 Free tec_ctrl 0 unit selection / Ftec0 unit sel

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(5)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
1	48	1

Description: Sets the unit for the parameters of the free technology controller 0.

Value:
1: %
2: 1 referred no dimensions
3: bar
4: °C
5: Pa
6: ltr/s
7: m³/s
8: ltr/min
9: m³/min
10: ltr/h
11: m³/h
12: kg/s
13: kg/min
14: kg/h
15: t/min
16: t/h
17: N
18: kN
19: Nm
20: psi
21: °F
22: gallon/s
23: inch³/s
24: gallon/min
25: inch³/min
26: gallon/h
27: inch³/h
28: lb/s
29: lb/min
30: lb/h
31: lbf
32: lbf ft
33: K
34: rpm
35: parts/min
36: m/s
37: ft³/s
38: ft³/min
39: BTU/min
40: BTU/h
41: mbar
42: inch wg
43: ft wg
44: m wg
45: % r.h.
46: g/kg
47: ppm
48: kg/cm²

Dependency: Only units of parameters with unit group 9_2 can be changed over using this parameter.

Refer to: p11027

p11027 Free tec_ctrl 0 unit reference quantity / Ftec0 unit ref

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0.01	340.28235E36	1.00

Description: Sets the reference quantity for the unit of the parameters of the free technology controller 0.

When changing over using changeover parameter p11026 to absolute units, all of the parameters involved refer to the reference quantity.

Dependency: Refer to: p11026

p11028 Free tec_ctrl 0 sampling time / Ftec0 t_samp

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0	4	2

Description: Sets the sampling time for the free technology controller 0.

Value:
0: Reserved
1: 128 ms
2: 256 ms
3: 512 ms
4: 1024 ms

r11049.0...11 CO/BO: Free tec_ctrl 0 status word / Ftec0 stat_word

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word of the free technology controller 0.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Deactivated	Yes	No	-
01	Limited	Yes	No	-
08	Actual value at the minimum	Yes	No	-
09	Actual value at the maximum	Yes	No	-
10	Output at the minimum	Yes	No	-
11	Output at the maximum	Yes	No	-

p11053 CI: Free tec_ctrl 0 setpoint signal source / Ftec0 setp s_s

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setpoint of the free technology controller 0.

p11057 Free tec_ctrl 0 setpoint ramp-up time / Ftec0 setp t_r-up

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-up time for the free technology controller 0.

Dependency: Refer to: p11058

Note: The ramp-up time is referred to 100 %.

p11058 Free tec_ctrl 0 setpoint ramp-down time / Ftec0 setp t_r-dn

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-down time for the free technology controller 0.

Dependency: Refer to: p11057

Note: The ramp-down time is referred to 100 %.

r11060 CO: Free tec_ctrl 0 setpoint after ramp-function generator / Ftec0 setp aft RFG

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_2	**Unit selection:** p11026	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the setpoint after the ramp-function generator of the free technology controller 0.

p11063 Free tec_ctrl 0 system deviation inversion / Ftec0 sys_dev inv

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the inversion of the system deviation of the free technology controller 0.

The setting depends on the type of control loop.

Value:
0: No inversion
1: Inversion

Caution: If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

Note: The correct setting can be determined as follows:

- inhibit free technology controller (p11200 = 0).
- increase the motor speed and in so doing, measure the actual value signal (of the free technology controller).
- if the actual value increases with increasing motor speed, then deactivate inversion.
- if the actual value decreases with increasing motor speed, then activate inversion.

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).

p11064 CI: Free tec_ctrl 0 actual value signal source / Ftec0 act v s_s

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the actual value of the free technology controller 0.

p11065 Free tec_ctrl 0 actual value smoothing time constant / Ftec0 act v T

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.00 [s]	60.00 [s]	0.00 [s]

Description: Sets the smoothing time constant (PT1) for the actual value of the free technology controller 0.

p11067 Free tec_ctrl 0 actual value upper limit / Ftec0 act v up lim

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_2	**Unit selection:** p11026	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the upper limit for the actual value signal of the free technology controller 0.

Dependency: Refer to: p11064

p11068 Free tec_ctrl 0 actual value lower limit / Ftec0 act v lo lim

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_2	**Unit selection:** p11026	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	-100.00 [%]

Description: Sets the lower limit for the actual value signal of the free technology controller 0.

Dependency: Refer to: p11064

p11071 Free tec_ctrl 0 actual value inversion / Ftec0 act v inv

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the inversion of the actual value signal of the free technology controller 0.

Value:
0: No inversion
1: Inversion

r11072 CO: Free tec_ctrl 0 actual value after limiter / Ftec0 act v af lim

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_2	**Unit selection:** p11026	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the actual value after the limiter of the free technology controller 0.

r11073 CO: Free tec_ctrl 0 system deviation / Ftec0 sys dev

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_2	**Unit selection:** p11026	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the system deviation of the free technology controller 0.

p11074 Free tec_ctrl 0 differentiation time constant / Ftec0 D comp T

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	0.000 [s]

Description: Sets the time constant for the differentiation (D component) of the free technology controller 0.

Note: Value = 0: Differentiation is deactivated.

p11080 Free tec_ctrl 0 proportional gain / Ftec0 Kp

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.000	1000.000	1.000

Description: Sets the proportional gain (P component) of the free technology controller 0.

Note: Value = 0: The proportional gain is deactivated.

p11085 Free tec_ctrl 0 integral time / Ftec0 Tn

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.000 [s]	10000.000 [s]	30.000 [s]

Description: Sets the integral time (I component, integrating time constant) of the free technology controller 0.

Note: Value = 0: The integral time is disabled.
If the parameter is set to zero during operation, the I component retains its most recent value.

p11091 CO: Free tec_ctrl 0 limit maximum / Ftec0 lim max

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the maximum limit of the free technology controller 0.

Dependency: Refer to: p11092

Note: The maximum limit must always be greater than the minimum limit (p11091 > p11092).

p11092 CO: Free tec_ctrl 0 limit minimum / Ftec0 lim min

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	0.00 [%]

Description: Sets the minimum limit of the free technology controller 0.

Dependency: Refer to: p11091

Note: The maximum limit must always be greater than the minimum limit (p11091 > p11092).

p11093 Free tec_ctrl 0 limit ramp-up/ramp-down time / Ftec0 lim r-u/r-dn

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.00 [s]	100.00 [s]	1.00 [s]

Description: Sets the ramp-up and ramp-down time for the maximum and minimum limit (p11091, p11092) of the free technology controller 0.

Dependency: Refer to: p11091, p11092

Note: The ramp-up/ramp-down times are referred to 100%.

r11094 CO: Free tec_ctrl 0 output signal / Ftec0 out_sig

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the output signal of the free technology controller 0.

p11097 CI: Free tec_ctrl 0 limit maximum signal source / Ftec0 lim max s_s

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	11091[0]

Description: Sets the signal source for the maximum limit of the free technology controller 0.

Dependency: Refer to: p11091

p11098 CI: Free tec_ctrl 0 limit minimum signal source / Ftec0 lim min s_s

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	11092[0]

Description: Sets the signal source for the minimum limit of the free technology controller 0.

Dependency: Refer to: p11092

p11099	CI: Free tec_ctrl 0 limit offset signal source / Ftec0 lim offs		
	Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
	Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the limit offset of the free technology controller 0.

p11100	BI: Free tec_ctrl 1 enable / Ftec1 enab		
	Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source to switch in/switch out the free technology controller 1.
1 signal: The technology controller is switched in.
0 signal: The technology controller is switched out.

p11126	Free tec_ctrl 1 unit selection / Ftec1 unit sel		
	Access level: 1	**Calculated:** -	**Data type:** Integer16
	Can be changed: C(5)	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
	Min	**Max**	**Factory setting**
	1	48	1

Description: Sets the unit for the parameters of the free technology controller 1.

Value:
1: %
2: 1 referred no dimensions
3: bar
4: °C
5: Pa
6: ltr/s
7: m³/s
8: ltr/min
9: m³/min
10: ltr/h
11: m³/h
12: kg/s
13: kg/min
14: kg/h
15: t/min
16: t/h
17: N
18: kN
19: Nm
20: psi
21: °F
22: gallon/s
23: inch³/s
24: gallon/min
25: inch³/min
26: gallon/h
27: inch³/h
28: lb/s
29: lb/min
30: lb/h
31: lbf
32: lbf ft
33: K

34: rpm
35: parts/min
36: m/s
37: ft³/s
38: ft³/min
39: BTU/min
40: BTU/h
41: mbar
42: inch wg
43: ft wg
44: m wg
45: % r.h.
46: g/kg
47: ppm
48: kg/cm²

Dependency: Only units of parameters with unit group 9_3 can be changed over using this parameter.

Refer to: p11127

p11127 Free tec_ctrl 1 unit reference quantity / Ftec1 unit ref

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.01	340.28235E36	1.00

Description: Sets the reference quantity for the unit of the parameters of the free technology controller 1.

When changing over using changeover parameter p11126 to absolute units, all of the parameters involved refer to the reference quantity.

Dependency: Refer to: p11126

p11128 Free tec_ctrl 1 sampling time / Ftec1 t_samp

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0	4	2

Description: Sets the sampling time for the free technology controller 1.

Value:
0: Reserved
1: 128 ms
2: 256 ms
3: 512 ms
4: 1024 ms

r11149.0...11 CO/BO: Free tec_ctrl 1 status word / Ftec1 stat_word

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word of the free technology controller 1.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Deactivated	Yes	No	-
01	Limited	Yes	No	-
08	Actual value at the minimum	Yes	No	-
09	Actual value at the maximum	Yes	No	-
10	Output at the minimum	Yes	No	-
11	Output at the maximum	Yes	No	-

p11153 CI: Free tec_ctrl 1 setpoint signal source / Ftec1 setp s_s

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setpoint of the free technology controller 1.

p11157 Free tec_ctrl 1 setpoint ramp-up time / Ftec1 setp t_r-up

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-up time for the free technology controller 1.

Dependency: Refer to: p11158

Note: The ramp-up time is referred to 100 %.

p11158 Free tec_ctrl 1 setpoint ramp-down time / Ftec1 setp t_r-dn

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-down time of the free technology controller 1.

Dependency: Refer to: p11157

Note: The ramp-down time is referred to 100 %.

r11160 CO: Free tec_ctrl 1 setpoint after ramp-function generator / Ftec1 setp aft RFG

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_3	**Unit selection:** p11126	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the setpoint after the ramp-function generator of the free technology controller 1.

p11163 Free tec_ctrl 1 system deviation inversion / Ftec1 sys_dev inv

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the inversion of the system deviation of the free technology controller 1.

The setting depends on the type of control loop.

Value:
0: No inversion
1: Inversion

Caution: If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

Note: The correct setting can be determined as follows:
- inhibit free technology controller (p11200 = 0).
- increase the motor speed and in so doing, measure the actual value signal (of the free technology controller).
- if the actual value increases with increasing motor speed, then deactivate inversion.
- if the actual value decreases with increasing motor speed, then activate inversion.

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).

p11164 CI: Free tec_ctrl 1 actual value signal source / Ftec1 act v s_s

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the actual value of the free technology controller 1.

p11165 Free tec_ctrl 1 actual value smoothing time constant / Ftec1 act v T

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.00 [s]	60.00 [s]	0.00 [s]

Description: Sets the smoothing time constant (PT1) for the actual value of the free technology controller 1.

p11167 Free tec_ctrl 1 actual value upper limit / Ftec1 act v up lim

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_3	**Unit selection:** p11126	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the upper limit for the actual value signal of the free technology controller 1.

Dependency: Refer to: p11164

p11168 Free tec_ctrl 1 actual value lower limit / Ftec1 act v lo lim

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_3	**Unit selection:** p11126	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	-100.00 [%]

Description: Sets the lower limit for the actual value signal of the free technology controller 1.

Dependency: Refer to: p11164

p11171 Free tec_ctrl 1 actual value inversion / Ftec1 act v inv

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the inversion of the actual value signal of the free technology controller 1.

Value:
0: No inversion
1: Inversion

r11172	**CO: Free tec_ctrl 1 actual value after limiter / Ftec1 act v af lim**		
	Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
	Unit group: 9_3	**Unit selection:** p11126	**Func. diagram:** 7030
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]
Description:	Display and connector output for the actual value after the limiter of the free technology controller 1.		

r11173	**CO: Free tec_ctrl 1 system deviation / Ftec1 sys dev**		
	Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
	Unit group: 9_3	**Unit selection:** p11126	**Func. diagram:** 7030
	Min	**Max**	**Factory setting**
	- [%]	- [%]	- [%]
Description:	Display and connector output for the system deviation of the free technology controller 1.		

p11174	**Free tec_ctrl 1 differentiation time constant / Ftec1 D comp T**		
	Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
	Min	**Max**	**Factory setting**
	0.000 [s]	60.000 [s]	0.000 [s]
Description:	Sets the time constant for the differentiation (D component) of the free technology controller 1.		
Note:	Value = 0: Differentiation is deactivated.		

p11180	**Free tec_ctrl 1 proportional gain / Ftec1 Kp**		
	Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
	Min	**Max**	**Factory setting**
	0.000	1000.000	1.000
Description:	Sets the proportional gain (P component) of the free technology controller 1.		
Note:	Value = 0: The proportional gain is deactivated.		

p11185	**Free tec_ctrl 1 integral time / Ftec1 Tn**		
	Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
	Min	**Max**	**Factory setting**
	0.000 [s]	10000.000 [s]	30.000 [s]
Description:	Sets the integral time (I component, integrating time constant) of the free technology controller 1.		
Note:	Value = 0: The integral time is disabled. If the parameter is set to zero during operation, the I component retains its most recent value.		

p11191 CO: Free tec_ctrl 1 limit maximum / Ftec1 lim max

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the maximum limit of the free technology controller 1.

Dependency: Refer to: p11192

Note: The maximum limit must always be greater than the minimum limit (p11191 > p11192).

p11192 CO: Free tec_ctrl 1 limit minimum / Ftec1 lim min

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	0.00 [%]

Description: Sets the minimum limit of the free technology controller 1.

Dependency: Refer to: p11191

Note: The maximum limit must always be greater than the minimum limit (p11191 > p11192).

p11193 Free tec_ctrl 1 limit ramp-up/ramp-down time / Ftec1 lim r-u/r-dn

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.00 [s]	100.00 [s]	1.00 [s]

Description: Sets the ramp-up and ramp-down time for the maximum and minimum limit (p11191, p11192) of the free technology controller 1.

Dependency: Refer to: p11191, p11192

Note: The ramp-up/ramp-down times are referred to 100%.

r11194 CO: Free tec_ctrl 1 output signal / Ftec1 out_sig

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the output signal of the free technology controller 1.

p11197 CI: Free tec_ctrl 1 limit maximum signal source / Ftec1 lim max s_s

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	11191[0]

Description: Sets the signal source for the maximum limit of the free technology controller 1.

Dependency: Refer to: p11191

p11198 CI: Free tec_ctrl 1 limit minimum signal source / Ftec1 lim min s_s

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	11192[0]

Description: Sets the signal source for the minimum limit of the free technology controller 1.

Dependency: Refer to: p11192

p11199 CI: Free tec_ctrl 1 limit offset signal source / Ftec1 lim offs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the limit offset of the free technology controller 1.

p11200 BI: Free tec_ctrl 2 enable / Ftec2 enab

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source to switch in/switch out the free technology controller 2.
1 signal: The technology controller is switched in.
0 signal: The technology controller is switched out.

p11226 Free tec_ctrl 2 unit selection / Ftec2 unit sel

Access level: 1	**Calculated:** -	**Data type:** Integer16
Can be changed: C(5)	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
1	48	1

Description: Sets the unit for the parameters of the free technology controller 2.

Value:
1: %
2: 1 referred no dimensions
3: bar
4: °C
5: Pa
6: ltr/s
7: m³/s
8: ltr/min
9: m³/min
10: ltr/h
11: m³/h
12: kg/s
13: kg/min
14: kg/h
15: t/min
16: t/h
17: N
18: kN
19: Nm
20: psi
21: °F
22: gallon/s

23: inch³/s
24: gallon/min
25: inch³/min
26: gallon/h
27: inch³/h
28: lb/s
29: lb/min
30: lb/h
31: lbf
32: lbf ft
33: K
34: rpm
35: parts/min
36: m/s
37: ft³/s
38: ft³/min
39: BTU/min
40: BTU/h
41: mbar
42: inch wg
43: ft wg
44: m wg
45: % r.h.
46: g/kg
47: ppm
48: kg/cm²

Dependency: Only units of parameters with unit group 9_4 can be changed over using this parameter.

Refer to: p11227

p11227 Free tec_ctrl 2 unit reference quantity / Ftec2 unit ref

Access level: 1	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.01	340.28235E36	1.00

Description: Sets the reference quantity for the unit of the parameters of the free technology controller 2.

When changing over using changeover parameter p11226 to absolute units, all of the parameters involved refer to the reference quantity.

Dependency: Refer to: p11226

p11228 Free tec_ctrl 2 sampling time / Ftec2 t_samp

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0	4	2

Description: Sets the sampling time for the free technology controller 2.

Value:
0: Reserved
1: 128 ms
2: 256 ms
3: 512 ms
4: 1024 ms

r11249.0...11 CO/BO: Free tec_ctrl 2 status word / Ftec2 stat_word

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	-

Description: Displays the status word of the free technology controller 2.

Bit field:

Bit	Signal name	1 signal	0 signal	FP
00	Deactivated	Yes	No	-
01	Limited	Yes	No	-
08	Actual value at the minimum	Yes	No	-
09	Actual value at the maximum	Yes	No	-
10	Output at the minimum	Yes	No	-
11	Output at the maximum	Yes	No	-

p11253 CI: Free tec_ctrl 2 setpoint signal source / Ftec2 setp s_src

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the setpoint of the free technology controller 2.

p11257 Free tec_ctrl 2 setpoint ramp-up time / Ftec2 setp t_r-up

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-up time for the free technology controller 2.

Dependency: Refer to: p11258

Note: The ramp-up time is referred to 100 %.

p11258 Free tec_ctrl 2 setpoint ramp-down time / Ftec2 setp t_r-dn

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.00 [s]	650.00 [s]	1.00 [s]

Description: Sets the ramp-down time of the free technology controller 2.

Dependency: Refer to: p11257

Note: The ramp-down time is referred to 100 %.

r11260 CO: Free tec_ctrl 2 setpoint after ramp-function generator / Ftec2 setp aft RFG

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_4	**Unit selection:** p11226	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the setpoint after the ramp-function generator of the free technology controller 2.

p11263 Free tec_ctrl 2 system deviation inversion / Ftec2 sys_dev inv

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the inversion of the system deviation of the free technology controller 2.

The setting depends on the type of control loop.

Value:
0: No inversion
1: Inversion

Caution: If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

Note: The correct setting can be determined as follows:

- inhibit free technology controller (p11200 = 0).
- increase the motor speed and in so doing, measure the actual value signal (of the free technology controller).
- if the actual value increases with increasing motor speed, then deactivate inversion.
- if the actual value decreases with increasing motor speed, then activate inversion.

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).

p11264 CI: Free tec_ctrl 2 actual value signal source / Ftec2 act v s_s

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the actual value of the free technology controller 2.

p11265 Free tec_ctrl 2 actual value smoothing time constant / Ftec2 act v T

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.00 [s]	60.00 [s]	0.00 [s]

Description: Sets the smoothing time constant (PT1) for the actual value of the free technology controller 2.

p11267 Free tec_ctrl 2 actual value upper limit / Ftec2 act v up lim

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_4	**Unit selection:** p11226	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the upper limit for the actual value signal of the free technology controller 2.

Dependency: Refer to: p11264

p11268 Free tec_ctrl 2 actual value lower limit / Ftec2 act v lo lim

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_4	**Unit selection:** p11226	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	-100.00 [%]

Description: Sets the lower limit for the actual value signal of the free technology controller 2.

Dependency: Refer to: p11264

p11271 Free tec_ctrl 2 actual value inversion / Ftec2 act v inv

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0	1	0

Description: Sets the inversion of the actual value signal of the free technology controller 2.

Value:
0: No inversion
1: Inversion

r11272 CO: Free tec_ctrl 2 actual value after limiter / Ftec2 act v af lim

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_4	**Unit selection:** p11226	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the actual value after the limiter of the free technology controller 2.

r11273 CO: Free tec_ctrl 2 system deviation / Ftec2 sys dev

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: 9_4	**Unit selection:** p11226	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the system deviation of the free technology controller 2.

p11274 Free tec_ctrl 2 differentiation time constant / Ftec2 D comp T

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.000 [s]	60.000 [s]	0.000 [s]

Description: Sets the time constant for the differentiation (D component) of the free technology controller 2.

Note: Value = 0: Differentiation is deactivated.

p11280 Free tec_ctrl 2 proportional gain / Ftec2 Kp

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.000	1000.000	1.000

Description: Sets the proportional gain (P component) of the free technology controller 2.

Note: Value = 0: The proportional gain is deactivated.

p11285 Free tec_ctrl 2 integral time / Ftec2 Tn

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.000 [s]	10000.000 [s]	30.000 [s]

Description: Sets the integral time (I component, integrating time constant) of the free technology controller 2.

Note: Value = 0: The integral time is disabled.

If the parameter is set to zero during operation, the I component retains its most recent value.

p11291 CO: Free tec_ctrl 2 limit maximum / Ftec2 lim max

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	100.00 [%]

Description: Sets the maximum limit of the free technology controller 2.

Dependency: Refer to: p11292

Note: The maximum limit must always be greater than the minimum limit (p11291 > p11292).

p11292 CO: Free tec_ctrl 2 limit minimum / Ftec2 lim min

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-200.00 [%]	200.00 [%]	0.00 [%]

Description: Sets the minimum limit of the free technology controller 2.

Dependency: Refer to: p11291

Note: The maximum limit must always be greater than the minimum limit (p11291 > p11292).

p11293 Free tec_ctrl 2 limit ramp-up/ramp-down time / Ftec2 lim r-u/r-dn

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: U, T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
0.00 [s]	100.00 [s]	1.00 [s]

Description: Sets the ramp-up and ramp-down time for the maximum and minimum limit (p11291, p11292) of the free technology controller 2.

Dependency: Refer to: p11291, p11292

Note: The ramp-up/ramp-down times are referred to 100%.

r11294 CO: Free tec_ctrl 2 output signal / Ftec2 out_sig

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Display and connector output for the output signal of the free technology controller 2.

p11297 CI: Free tec_ctrl 2 limit maximum signal source / Ftec2 lim max s_s

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	11291[0]

Description: Sets the signal source for the maximum limit of the free technology controller 2.

Dependency: Refer to: p11291

p11298 CI: Free tec_ctrl 2 limit minimum signal source / Ftec2 lim min s_s

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	11292[0]

Description: Sets the signal source for the minimum limit of the free technology controller 2.

Dependency: Refer to: p11292

p11299 CI: Free tec_ctrl 2 limit offset signal source / Ftec2 lim offs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: U, T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7030
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the limit offset of the free technology controller 2.

r20001[0...9] Run-time group sampling time / RTG sampling time

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [ms]	- [ms]	- [ms]

Description: Displays the current sampling time of the run-time group 0 to 9.

Index:
[0] = Run-time group 0
[1] = Run-time group 1
[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

p20030[0...3] BI: AND 0 inputs / AND 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 0 of the AND function block.

Index:
[0] = Input I0
[1] = Input I1

[2] = Input I2
[3] = Input I3

r20031 BO: AND 0 output Q / AND 0 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 0 of the AND function block.

p20032 AND 0 run-time group / AND 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance AND 0 of the AND function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20033 AND 0 run sequence / AND 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
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

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
-	-	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

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
-	-	-

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

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
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

p20037 AND 1 run sequence / AND 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
0	32000	20

Description: Setting parameter for the run sequence of instance AND 1 within the run-time group set in p20036.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20038[0...3] BI: AND 2 inputs / AND 2 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 2 of the AND function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20039 BO: AND 2 output Q / AND 2 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 2 of the AND function block.

p20040 AND 2 run-time group / AND 2 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance AND 2 of the AND function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2

3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20041 AND 2 run sequence / AND 2 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 2710
Min	**Max**	**Factory setting**
0	32000	30

Description: Setting parameter for the run sequence of instance AND 2 within the run-time group set in p20040.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20042[0...3] BI: AND 3 inputs / AND 3 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance AND 3 of the AND function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20043 BO: AND 3 output Q / AND 3 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q = I0 & I1 & I2 & I3 of instance AND 3 of the AND function block.

p20044 AND 3 run-time group / AND 3 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance AND 3 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

p20045	AND 3 run sequence / AND 3 RunSeq		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7210
	Min	**Max**	**Factory setting**
	0	32000	40

Description: Setting parameter for the run sequence of instance AND 3 within the run-time group set in p20044.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20046[0...3]	BI: OR 0 inputs / OR 0 inputs		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 0 of the OR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20047	BO: OR 0 output Q / OR 0 output Q		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display parameter for binary quantity Q = I0 | I1 | I2 | I3 of instance OR 0 of the OR function block.

p20048	OR 0 run-time group / OR 0 RTG		
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
	Min	**Max**	**Factory setting**
	1	9999	9999

Description: Setting parameter for the run-time group in which the instance OR 0 of the OR function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20049	OR 0 run sequence / OR 0 RunSeq		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
	Min	**Max**	**Factory setting**
	0	32000	60

Description: Setting parameter for the run sequence of instance OR 0 within the run-time group set in p20048.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20050[0...3] BI: OR 1 inputs / OR 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 1 of the OR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20051 BO: OR 1 output Q / OR 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q = I0 | I1 | I2 | I3 of instance OR 1 of the OR function block.

p20052 OR 1 run-time group / OR 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance OR 1 of the OR function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20053 OR 1 run sequence / OR 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
Min	**Max**	**Factory setting**
0	32000	70

Description: Setting parameter for the run sequence of instance OR 1 within the run-time group set in p20052.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20054[0...3] BI: OR 2 inputs / OR 2 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance OR 2 of the OR function block.

Index:
[0] = Input I0
[1] = Input I1

[2] = Input I2
[3] = Input I3

r20055 BO: OR 2 output Q / OR 2 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q = I0 | I1 | I2 | I3 of instance OR 2 of the OR function block.

p20056 OR 2 run-time group / OR 2 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance OR 2 of the OR function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20057 OR 2 run sequence / OR 2 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
Min	**Max**	**Factory setting**
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.

p20058[0...3] BI: OR 3 inputs / OR 3 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
Min	**Max**	**Factory setting**
-	-	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

r20059 BO: OR 3 output Q / OR 3 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q = I0 | I1 | I2 | I3 of instance OR 3 of the OR function block.

p20060 OR 3 run-time group / OR 3 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
Min	**Max**	**Factory setting**
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.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20061 OR 3 run sequence / OR 3 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7212
Min	**Max**	**Factory setting**
0	32000	90

Description: Setting parameter for the run sequence of instance OR 3 within the run-time group set in p20060.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20062[0...3] BI: XOR 0 inputs / XOR 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 0 of the XOR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20063 BO: XOR 0 output Q / XOR 0 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q of instance XOR 0 of the XOR function block.

p20064 XOR 0 run-time group / XOR 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance XOR 0 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

p20065 XOR 0 run sequence / XOR 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
0	32000	110

Description: Setting parameter for the run sequence of instance XOR 0 within the run-time group set in p20064.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20066[0...3] BI: XOR 1 inputs / XOR 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 1 of the XOR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20067 BO: XOR 1 output Q / XOR 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q of instance XOR 1 of the XOR function block.

p20068 XOR 1 run-time group / XOR 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance XOR 1 of the XOR function block is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20069 XOR 1 run sequence / XOR 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
0	32000	120

Description: Setting parameter for the run sequence of instance XOR 1 within the run-time group set in p20068.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20070[0...3] BI: XOR 2 inputs / XOR 2 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0, I1, I2, I3 of instance XOR 2 of the XOR function block.

Index:
[0] = Input I0
[1] = Input I1
[2] = Input I2
[3] = Input I3

r20071 BO: XOR 2 output Q / XOR 2 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q of instance XOR 2 of the XOR function block.

p20072 XOR 2 run-time group / XOR 2 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
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

p20073 XOR 2 run sequence / XOR 2 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
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.

p20074[0...3] BI: XOR 3 inputs / XOR 3 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
-	-	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

r20075 BO: XOR 3 output Q / XOR 3 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity Q of instance XOR 3 of the XOR function block.

p20076 XOR 3 run-time group / XOR 3 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance XOR 3 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

p20077 XOR 3 run sequence / XOR 3 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7214
Min	**Max**	**Factory setting**
0	32000	140

Description: Setting parameter for the run sequence of instance XOR 3 within the run-time group set in p20076.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20078 BI: NOT 0 input I / NOT 0 input I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity I of instance NOT 0 of the inverter.

r20079 BO: NOT 0 inverted output / NOT 0 inv output

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output of instance NOT 0 of the inverter.

p20080 NOT 0 run-time group / NOT 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 0 of the inverter is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20081 NOT 0 run sequence / NOT 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
0	32000	160

Description: Setting parameter for the run sequence of instance NOT 0 within the run-time group set in p20080.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20082 BI: NOT 1 input I / NOT 1 input I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity I of instance NOT 1 of the inverter.

r20083 BO: NOT 1 inverted output / NOT 1 inv output

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output of instance NOT 1 of the inverter.

p20084 NOT 1 run-time group / NOT 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 1 of the inverter is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20085 NOT 1 run sequence / NOT 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
0	32000	170

Description: Setting parameter for the run sequence of instance NOT 1 within the run-time group set in p20084.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20086 BI: NOT 2 input I / NOT 2 input I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity I of instance NOT 2 of the inverter.

r20087 BO: NOT 2 inverted output / NOT 2 inv output

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output of instance NOT 2 of the inverter.

p20088 NOT 2 run-time group / NOT 2 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 2 of the inverter is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4

5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20089 NOT 2 run sequence / NOT 2 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
0	32000	180

Description: Setting parameter for the run sequence of instance NOT 2 within the run-time group set in p20088.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20090 BI: NOT 3 input I / NOT 3 input I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity I of instance NOT 3 of the inverter.

r20091 BO: NOT 3 inverted output / NOT 3 inv output

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output of instance NOT 3 of the inverter.

p20092 NOT 3 run-time group / NOT 3 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 3 of the inverter is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20093 NOT 3 run sequence / NOT 3 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
0	32000	190

Description: Setting parameter for the run sequence of instance NOT 3 within the run-time group set in p20092.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20094[0...3] CI: ADD 0 inputs / ADD 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities X0, X1, X2, X3 of instance ADD 0 of the adder.

Index:
[0] = Input X0
[1] = Input X1
[2] = Input X2
[3] = Input X3

r20095 CO: ADD 0 output Y / ADD 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the output quantity Y = X0 + X1 + X2 + X3 of instance ADD 0 of the adder.

p20096 ADD 0 run-time group / ADD 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance ADD 0 of the adder is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20097 ADD 0 run sequence / ADD 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
0	32000	210

Description: Setting parameter for the run sequence of instance ADD 0 within the run-time group set in p20096.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20098[0...3] CI: ADD 1 inputs / ADD 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities X0, X1, X2, X3 of instance ADD 1 of the adder.

Index:
[0] = Input X0
[1] = Input X1
[2] = Input X2
[3] = Input X3

r20099 CO: ADD 1 output Y / ADD 1 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the output quantity Y = X0 + X1 + X2 + X3 of instance ADD 1 of the adder.

p20100 ADD 1 run-time group / ADD 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance ADD 1 of the adder is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20101 ADD 1 run sequence / ADD 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
0	32000	220

Description: Setting parameter for the run sequence of instance ADD 1 within the run-time group set in p20100.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20102[0...1] CI: SUB 0 inputs / SUB 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of minuend X1 and subtrahend X2 of instance SUB 0 of the subtractor.

Index:
[0] = Minuend X1
[1] = Subtrahend X2

r20103 CO: SUB 0 difference Y / SUB 0 difference Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the difference Y = X1 - X2 of instance SUB 0 of the subtractor.

p20104 SUB 0 run-time group / SUB 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance SUB 0 of the subtractor is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20105 SUB 0 run sequence / SUB 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
0	32000	240

Description: Setting parameter for the run sequence of instance SUB 0 within the run-time group set in p20104.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20106[0...1] CI: SUB 1 inputs / SUB 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of minuend X1 and subtrahend X2 of instance SUB 1 of the subtractor.

Index:
[0] = Minuend X1
[1] = Subtrahend X2

r20107 CO: SUB 1 difference Y / SUB 1 difference Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the difference Y = X1 - X2 of instance SUB 1 of the subtractor.

p20108 SUB 1 run-time group / SUB 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance SUB 1 of the subtractor is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20109 SUB 1 run sequence / SUB 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
0	32000	250

Description: Setting parameter for the run sequence of instance SUB 1 within the run-time group set in p20108.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20110[0...3] CI: MUL 0 inputs / MUL 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of the factors X0, X1, X2, X3 of instance MUL 0 of the multiplier.

Index:
[0] = Factor X0
[1] = Factor X1
[2] = Factor X2
[3] = Factor X3

r20111 CO: MUL 0 product Y / MUL 0 product Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the product Y = X0 * X1 * X2 * X3 of instance MUL 0 of the multiplier.

p20112 MUL 0 run-time group / MUL 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance MUL 0 of the multiplier is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20113 MUL 0 run sequence / MUL 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
0	32000	270

Description: Setting parameter for the run sequence of instance MUL 0 within the run-time group set in p20112.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20114[0...3] CI: MUL 1 inputs / MUL 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of the factors X0, X1, X2, X3 of instance MUL 1 of the multiplier.

Index:
[0] = Factor X0
[1] = Factor X1
[2] = Factor X2
[3] = Factor X3

r20115 CO: MUL 1 product Y / MUL 1 product Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the product Y = X0 * X1 * X2 * X3 of instance MUL 1 of the multiplier.

p20116 MUL 1 run-time group / MUL 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance MUL 1 of the multiplier is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20117 MUL 1 run sequence / MUL 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
0	32000	280

Description: Setting parameter for the run sequence of instance MUL 1 within the run-time group set in p20116.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20118[0...1] CI: DIV 0 inputs / DIV 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of dividend X1 and divisor X2 of instance DIV 0 of the divider.

Index:
[0] = Dividend X0
[1] = Divisor X1

r20119[0...2] CO: DIV 0 quotient / DIV 0 quotient

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for quotients Y = X1 / X2, integer number quotients YIN, and division remainder MOD = (Y - YIN) x X2 of instance DIV 0 of the divider.

Index:
[0] = Quotient Y
[1] = Integer number quotient YIN
[2] = Div remainder MOD

r20120 BO: DIV 0 divisor is zero QF / DIV 0 divisor=0 QF

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the signal QF that the divisor X2 of instance DIV 0 of the divider is zero.
X2 = 0.0 => QF = 1

p20121 DIV 0 run-time group / DIV 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance DIV 0 of the divider is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20122 DIV 0 run sequence / DIV 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
0	32000	300

Description: Setting parameter for the run sequence of instance DIV 0 within the run-time group set in p20121.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20123[0...1] CI: DIV 1 inputs / DIV 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of dividend X1 and divisor X2 of instance DIV 1 of the divider.

Index:
[0] = Dividend X0
[1] = Divisor X1

r20124[0...2] CO: DIV 1 quotient / DIV 1 quotient

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for quotients Y = X1 / X2, the integer number quotients YIN, and division remainder MOD = (Y - YIN) x X2 of instance DIV 1 of the divider.

Index:
[0] = Quotient Y
[1] = Integer number quotient YIN
[2] = Div remainder MOD

r20125 BO: DIV 1 divisor is zero QF / DIV 1 divisor=0 QF

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the signal QF that the divisor X2 of instance DIV 1 of the divider is zero.

X2 = 0.0 => QF = 1

p20126 DIV 1 run-time group / DIV 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance DIV 1 of the divider is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20127 DIV 1 run sequence / DIV 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7222
Min	**Max**	**Factory setting**
0	32000	310

Description: Setting parameter for the run sequence of instance DIV 1 within the run-time group set in p20126.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20128 CI: AVA 0 input X / AVA 0 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7224
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of the input quantity X of instance AVA 0 of the absolute value generator with sign evaluation.

r20129 CO: AVA 0 output Y / AVA 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7224
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output quantity Y of instance AVA 0 of the absolute value generator with sign evaluation.

r20130 BO: AVA 0 input negative SN / AVA 0 input neg SN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7224
Min	**Max**	**Factory setting**
-	-	-

Description: 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

p20131 AVA 0 run-time group / AVA 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7224
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance AVA 0 of the absolute value generator with sign evaluation is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20132 AVA 0 run sequence / AVA 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7224
Min	**Max**	**Factory setting**
0	32000	340

Description: Setting parameter for the run sequence of instance AVA 0 within the run-time group set in p20131.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20133 CI: AVA 1 input X / AVA 1 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7224
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of the input quantity X of instance AVA 1 of the absolute value generator with sign evaluation.

r20134 CO: AVA 1 output Y / AVA 1 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7224
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output quantity Y of instance AVA 1 of the absolute value generator with sign evaluation.

r20135 BO: AVA 1 input negative SN / AVA 1 input neg SN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7224
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for signal SN that the input quantity X of instance AVA 1 of the absolute value generator with sign evaluation is negative.

X < 0.0 => SN = 1

p20136 AVA 1 run-time group / AVA 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7224
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance AVA 1 of the absolute value generator with sign evaluation is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20137 AVA 1 run sequence / AVA 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7224
Min	**Max**	**Factory setting**
0	32000	350

Description: Setting parameter for the run sequence of instance AVA 1 within the run-time group set in p20136.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20138 BI: MFP 0 input pulse I / MFP 0 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance MFP 0 of the pulse generator.

p20139 MFP 0 pulse duration in ms / MFP 0 pulse_dur ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
0.00	5400000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance MFP 0 of the pulse generator.

r20140 BO: MFP 0 output Q / MFP 0 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance MFP 0 of the pulse generator.

p20141 MFP 0 run-time group / MFP 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance MFP 0 of the pulse generator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20142 MFP 0 run sequence / MFP 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
0	32000	370

Description: Setting parameter for the run sequence of instance MFP 0 within the run-time group set in p20141.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20143 BI: MFP 1 input pulse I / MFP 1 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance MFP 1 of the pulse generator.

p20144 MFP 1 pulse duration in ms / MFP 1 pulse_dur ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
0.00	5400000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance MFP 1 of the pulse generator.

r20145 BO: MFP 1 output Q / MFP 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance MFP 1 of the pulse generator.

p20146 MFP 1 run-time group / MFP 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance MFP 1 of the pulse generator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20147 MFP 1 run sequence / MFP 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
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.

p20148 BI: PCL 0 input pulse I / PCL 0 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance PCL 0 of the pulse shortener.

p20149 PCL 0 pulse duration in ms / PCL 0 pulse_dur ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
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

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PCL 0 of the pulse shortener.

p20151 PCL 0 run-time group / PCL 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
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

p20152 PCL 0 run sequence / PCL 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
0	32000	400

Description: Setting parameter for the run sequence of instance PCL 0 within the run-time group set in p20151.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20153 BI: PCL 1 input pulse I / PCL 1 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance PCL 1 of the pulse shortener.

p20154 PCL 1 pulse duration in ms / PCL 1 pulse_dur ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
0.00	5400000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance PCL 1 of the pulse shortener.

r20155 BO: PCL 1 output Q / PCL 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PCL 1 of the pulse shortener.

p20156 PCL 1 run-time group / PCL 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PCL 1 of the pulse shortener is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20157 PCL 1 run sequence / PCL 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
0	32000	410

Description: Setting parameter for the run sequence of instance PCL 1 within the run-time group set in p20156.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20158 BI: PDE 0 input pulse I / PDE 0 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance PDE 0 of the closing delay device.

p20159 PDE 0 pulse delay time in ms / PDE 0 t_del ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
Min	**Max**	**Factory setting**
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.

r20160 BO: PDE 0 output Q / PDE 0 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PDE 0 of the closing delay device.

p20161 PDE 0 run-time group / PDE 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
Min	**Max**	**Factory setting**
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

p20162 PDE 0 run sequence / PDE 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
Min	**Max**	**Factory setting**
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.

p20163 BI: PDE 1 input pulse I / PDE 1 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance PDE 1 of the closing delay device.

p20164 PDE 1 pulse delay time in ms / PDE 1 t_del ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
Min	**Max**	**Factory setting**
0.00	5400000.00	0.00

Description: Setting parameter for pulse delay time T in milliseconds of instance PDE 1 of the closing delay device.

r20165 BO: PDE 1 output Q / PDE 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PDE 1 of the closing delay device.

p20166 PDE 1 run-time group / PDE 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance PDE 1 of the closing delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20167 PDE 1 run sequence / PDE 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
Min	**Max**	**Factory setting**
0	32000	440

Description: Setting parameter for the run sequence of instance PDE 1 within the run-time group set in p20166.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20168 BI: PDF 0 input pulse I / PDF 0 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance PDF 0 of the breaking delay device.

p20169 PDF 0 pulse extension time in ms / PDF 0 t_ext ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
0.00	5400000.00	0.00

Description: Setting parameter for pulse extension time T in milliseconds of instance PDF 0 of the breaking delay device.

r20170 BO: PDF 0 output Q / PDF 0 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PDF 0 of the breaking delay device.

p20171 PDF 0 run-time group / PDF 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PDF 0 of the breaking delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20172 PDF 0 run sequence / PDF 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
0	32000	460

Description: Setting parameter for the run sequence of instance PDF 0 within the run-time group set in p20171.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20173 BI: PDF 1 input pulse I / PDF 1 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance PDF 1 of the breaking delay device.

p20174 PDF 1 pulse extension time in ms / PDF 1 t_ext ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
0.00	5400000.00	0.00

Description: Setting parameter for pulse extension time T in milliseconds of instance PDF 1 of the breaking delay device.

r20175 BO: PDF 1 output Q / PDF 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PDF 1 of the breaking delay device.

p20176 PDF 1 run-time group / PDF 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PDF 1 of the breaking delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20177 PDF 1 run sequence / PDF 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
0	32000	470

Description: Setting parameter for the run sequence of instance PDF 1 within the run-time group set in p20176.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20178[0...1] BI: PST 0 inputs / PST 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7234
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for input pulse I and the reset input R of instance PST 0 of the pulse extension element.

Index:
[0] = Input pulse I
[1] = Reset input R

p20179 PST 0 pulse duration in ms / PST 0 pulse_dur ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7234
Min	**Max**	**Factory setting**
0.00	5400000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance PST 0 of the pulse extension element.

r20180 BO: PST 0 output Q / PST 0 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7234
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PST 0 of the pulse extension element.

p20181 PST 0 run-time group / PST 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7234
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PST 0 of the pulse extension element is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20182 PST 0 run sequence / PST 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7234
Min	**Max**	**Factory setting**
0	7999	490

Description: Setting parameter for the run sequence of instance PST 0 within the run-time group set in p20181.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20183[0...1] BI: PST 1 inputs / PST 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7234
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for input pulse I and the reset input R of instance PST 1 of the pulse extension element.

Index:
[0] = Input pulse I
[1] = Reset input R

p20184 PST 1 pulse duration in ms / PST 1 pulse_dur ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7234
Min	**Max**	**Factory setting**
0.00	5400000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance PST 1 of the pulse extension element.

r20185 BO: PST 1 output Q / PST 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7234
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PST 1 of the pulse extension element.

p20186 PST 1 run-time group / PST 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7234
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PST 1 of the pulse extension element is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20187 PST 1 run sequence / PST 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7234
Min	**Max**	**Factory setting**
0	7999	500

Description: Setting parameter for the run sequence of instance PST 1 within the run-time group set in p20186.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20188[0...1] BI: RSR 0 inputs / RSR 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for set input S and reset input R of instance RSR 0 of the RS flipflop.

Index:
[0] = Set S
[1] = Reset R

r20189 BO: RSR 0 output Q / RSR 0 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output Q of instance RSR 0 of the RS flipflop

r20190 BO: RSR 0 inverted output QN / RSR 0 inv outp QN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for inverted output QN of instance RSR 0 of the RS flipflop.

p20191 RSR 0 run-time group / RSR 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which instance RSR 0 of the RS flipflop is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20192 RSR 0 run sequence / RSR 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
0	7999	520

Description: Setting parameter for the run sequence of instance RSR 0 within the run-time group set in p20191.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20193[0...1] BI: RSR 1 inputs / RSR 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for set input S and reset input R of instance RSR 1 of the RS flipflop.

Index:
[0] = Set S
[1] = Reset R

r20194 BO: RSR 1 output Q / RSR 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output Q of instance RSR 1 of the RS flipflop

r20195 BO: RSR 1 inverted output QN / RSR 1 inv outp QN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for inverted output QN of instance RSR 1 of the RS flipflop.

p20196 RSR 1 run-time group / RSR 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which instance RSR 1 of the RS flipflop is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20197 RSR 1 run sequence / RSR 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
0	7999	530

Description: Setting parameter for the run sequence of instance RSR 1 within the run-time group set in p20196.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20198[0...3] BI: DFR 0 inputs / DFR 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	0

Description: 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.

Index:
[0] = Trigger input I
[1] = D input D
[2] = Set S
[3] = Reset R

r20199 BO: DFR 0 output Q / DFR 0 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output Q of instance DFR 0 of the D flipflop.

r20200 BO: DFR 0 inverted output QN / DFR 0 inv outp QN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output QN of instance DFR 0 of the D flipflop.

p20201 DFR 0 run-time group / DFR 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which instance DFR 0 of the D flipflop is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20202 DFR 0 run sequence / DFR 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
0	32000	550

Description: Setting parameter for the run sequence of instance DFR 0 within the run-time group set in p20201.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20203[0...3] BI: DFR 1 inputs / DFR 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for trigger input I, D input D, set input S, and reset input R of instance DFR 1 of the D flipflop.

Index:
[0] = Trigger input I
[1] = D input D
[2] = Set S
[3] = Reset R

r20204 BO: DFR 1 output Q / DFR 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output Q of instance DFR 1 of the D flipflop.

r20205 BO: DFR 1 inverted output QN / DFR 1 inv outp QN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output QN of instance DFR 1 of the D flipflop.

p20206 DFR 1 run-time group / DFR 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which instance DFR 1 of the D flipflop is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20207 DFR 1 run sequence / DFR 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
0	32000	560

Description: Setting parameter for the run-time group of instance DFR 1 within the run-time group set in p20206.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20208[0...1] BI: BSW 0 inputs / BSW 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0 and I1 of instance BSW 0 of the binary changeover switch.

Index:
[0] = Input I0
[1] = Input I1

p20209 BI: BSW 0 switch setting I / BSW 0 sw_setting

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of the switch setting I of instance BSW 0 of the binary changeover switch.

r20210 BO: BSW 0 output Q / BSW 0 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output quantity Q of instance BSW 0 of the binary changeover switch.

p20211 BSW 0 run-time group / BSW 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance BSW 0 of the binary changeover switch is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20212 BSW 0 run sequence / BSW 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
0	7999	580

Description: Setting parameter for the run sequence of instance BSW 0 within the run-time group set in p20211.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20213[0...1] BI: BSW 1 inputs / BSW 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities I0 and I1 of instance BSW 1 of the binary changeover switch.

Index:
[0] = Input I0
[1] = Input I1

p20214 BI: BSW 1 switch setting I / BSW 1 sw_setting

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of the switch setting I of instance BSW 1 of the binary changeover switch.

r20215 BO: BSW 1 output Q / BSW 1 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output quantity Q of instance BSW 1 of the binary changeover switch.

p20216 BSW 1 run-time group / BSW 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance BSW 1 of the binary changeover switch is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20217 BSW 1 run sequence / BSW 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
0	7999	590

Description: Setting parameter for the run sequence of instance BSW 1 within the run-time group set in p20216.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20218[0...1] CI: NSW 0 inputs / NSW 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities X0 and X1 of instance NSW 0 of the numeric changeover switch.

Index:
[0] = Input X0
[1] = Input X1

p20219 BI: NSW 0 switch setting I / NSW 0 sw_setting

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of the switch setting I of instance NSW 0 of the numeric changeover switch.

r20220 CO: NSW 0 output Y / NSW 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output quantity Y of instance NSW 0 of the numeric changeover switch.

p20221 NSW 0 run-time group / NSW 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance NSW 0 of the numeric changeover switch is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20222 NSW 0 run sequence / NSW 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
0	32000	610

Description: Setting parameter for the run sequence of instance NSW 0 within the run-time group set in p20221.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20223[0...1] CI: NSW 1 inputs / NSW 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities X0 and X1 of instance NSW 1 of the numeric changeover switch.

Index:
[0] = Input X0
[1] = Input X1

p20224 BI: NSW 1 switch setting I / NSW 1 sw_setting

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of the switch setting I of instance NSW 1 of the numeric changeover switch.

r20225 CO: NSW 1 output Y / NSW 1 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output quantity Y of instance NSW 1 of the numeric changeover switch.

p20226 NSW 1 run-time group / NSW 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance NSW 1 of the numeric changeover switch is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20227 NSW 1 run sequence / NSW 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7250
Min	**Max**	**Factory setting**
0	32000	620

Description: Setting parameter for the run sequence of instance NSW 1 within the run-time group set in p20226.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20228 CI: LIM 0 input X / LIM 0 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity X of instance LIM 0 of the limiter.

p20229 LIM 0 upper limit value LU / LIM 0 upper lim LU

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the upper limit value LU of instance LIM 0 of the limiter.

p20230 LIM 0 lower limit value LL / LIM 0 lower lim LL

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the lower limit value LL of instance LIM 0 of the limiter.

r20231 CO: LIM 0 output Y / LIM 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the limited output quantity Y of instance LIM 0 of the limiter.

r20232 BO: LIM 0 input quantity at the upper limit QU / LIM 0 QU

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter of instance LIM 0 of limiter QU (upper limit reached), i.e. QU = 1 for X >= LU.

r20233 BO: LIM 0 input quantity at the lower limit QL / LIM 0 QL

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter of instance LIM 0 of limiter QL (lower limit reached), i.e. QL = 1 for X <= LL.

p20234 LIM 0 run-time group / LIM 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance LIM 0 of the limiter is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20235 LIM 0 run sequence / LIM 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
0	32000	640

Description: Setting parameter for the run sequence of instance LIM 0 within the run-time group set in p20234.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20236 CI: LIM 1 input X / LIM 1 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity X of instance LIM 1 of the limiter.

p20237 LIM 1 upper limit value LU / LIM 1 upper lim LU

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the upper limit value LU of instance LIM 1 of the limiter.

p20238 LIM 1 lower limit value LL / LIM 1 lower lim LL

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the lower limit value LL of instance LIM 1 of the limiter.

r20239 CO: LIM 1 output Y / LIM 1 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the limited output quantity Y of instance LIM 1 of the limiter.

r20240 BO: LIM 1 input quantity at the upper limit QU / LIM 1 QU

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter of instance LIM 1 of limiter QU (upper limit reached), i.e. QU = 1 for X >= LU.

r20241 BO: LIM 1 input quantity at the lower limit QL / LIM 1 QL

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter of instance LIM 1 of limiter QL (lower limit reached), i.e. QL = 1 for X <= LL.

p20242 LIM 1 run-time group / LIM 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance LIM 1 of the limiter is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20243 LIM 1 run sequence / LIM 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7260
Min	**Max**	**Factory setting**
0	32000	650

Description: Setting parameter for the run sequence of instance LIM 1 within the run-time group set in p20242.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20244[0...1] CI: PT1 0 inputs / PT1 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7262
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity X and of setting value SV of instance PT1 0 of the smoothing element.

Index: [0] = Input X
[1] = Setting value SV

p20245 BI: PT1 0 accept setting value S / PT1 0 acc set val

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7262
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the "accept setting value" signal of instant PT1 0 of the smoothing element.

p20246 PT1 0 smoothing time constant in ms / PT1 0 T_smooth ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7262
Min	**Max**	**Factory setting**
0.00	340.28235E36	0.00

Description: Sets the smoothing time constant T in milliseconds of instance PT1 0 of the smoothing element.

r20247 CO: PT1 0 output Y / PT1 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7262
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the smoothed output quantity Y of instance PT1 0 of the smoothing element.

p20248 PT1 0 run-time group / PT1 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7262
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance PT1 0 of the smoothing element is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20249 PT1 0 run sequence / PT1 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7262
Min	**Max**	**Factory setting**
0	32000	670

Description: Setting parameter for the run sequence of instance PT1 0 within the run-time group set in p20248.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20250[0...1] CI: PT1 1 inputs / PT1 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7262
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity X and of setting value SV of instance PT1 1 of the smoothing element.

Index:
[0] = Input X
[1] = Setting value SV

p20251 BI: PT1 1 accept setting value S / PT1 1 acc set val

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7262
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the "accept setting value" signal of instant PT1 1 of the smoothing element.

p20252 PT1 1 smoothing time constant in ms / PT1 1 T_smooth ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7262
Min	**Max**	**Factory setting**
0.00	340.28235E36	0.00

Description: Sets the smoothing time constant T in milliseconds of instance PT1 1 of the smoothing element.

r20253 CO: PT1 1 output Y / PT1 1 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7262
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the smoothed output quantity Y of instance PT1 1 of the smoothing element.

p20254 PT1 1 run-time group / PT1 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7262
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance PT1 1 of the smoothing element is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20255 PT1 1 run sequence / PT1 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7262
Min	**Max**	**Factory setting**
0	32000	680

Description: Setting parameter for the run sequence of instance PT1 1 within the run-time group set in p20254.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20256[0...1] CI: INT 0 inputs / INT 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity X and of setting value SV of instance INT 0 of the integrator.

Index:
[0] = Input X
[1] = Setting value SV

p20257 INT 0 upper limit value LU / INT 0 upper lim LU

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Sets the upper limit value LU of instance INT 0 of the integrator.

p20258	INT 0 lower limit value LL / INT 0 lower lim LL		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
	Min	**Max**	**Factory setting**
	-340.28235E36	340.28235E36	0.0000
Description:	Sets the lower limit value LL of instance INT 0 of the integrator.		

p20259	INT 0 integrating time constant in ms / INT 0 T_Integr ms		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
	Min	**Max**	**Factory setting**
	0.00	340.28235E36	0.00
Description:	Sets the integrating time constant Ti in milliseconds of instance INT 0 of the integrator.		

p20260	BI: INT 0 accept setting value S / INT 0 acc set val		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
	Min	**Max**	**Factory setting**
	-	-	0
Description:	Sets the signal source for the "accept setting value" signal of instant INT 0 of the integrator.		

r20261	CO: INT 0 output Y / INT 0 output Y		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
	Min	**Max**	**Factory setting**
	-	-	-
Description:	Display parameter for output quantity Y of instance INT 0 of the integrator. If LL>= LU, then the output quantity Y = LU.		

r20262	BO: INT 0 integrator at the upper limit QU / INT 0 QU		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
	Min	**Max**	**Factory setting**
	-	-	-
Description:	Display parameter for the signal QU that output quantity Y of instance INT 0 of the integrator has reached the upper limit value LU.		

r20263	BO: INT 0 integrator at the lower limit QL / INT 0 QL		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
	Min	**Max**	**Factory setting**
	-	-	-
Description:	Display parameter for the signal QL that output quantity Y of instance INT 0 of the integrator has reached the lower limit value LL.		

p20264 INT 0 run-time group / INT 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance INT 0 of the integrator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20265 INT 0 run sequence / INT 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
Min	**Max**	**Factory setting**
0	32000	700

Description: Setting parameter for the run sequence of instance INT 0 within the run-time group set in p20264.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20266 CI: LVM 0 input X / LVM 0 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity X of instance LVM 0 of the double-sided limiter.

p20267 LVM 0 interval average value M / LVM 0 avg value M

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the interval average M of instance LVM 0 of the double-sided limiter.

p20268 LVM 0 interval limit L / LVM 0 limit L

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the interval limit L of instance LVM 0 of the double-sided limiter.

p20269 LVM 0 hyst HY / LVM 0 hyst HY

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for hysteresis HY of instance LVM 0 of the double-sided limiter.

r20270 BO: LVM 0 input quantity above interval QU / LVM 0 X above QU

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-	-	-

Description: 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 >= M + L - HY.

r20271 BO: LVM 0 input quantity within interval QM / LVM 0 X within QM

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter of instance LVM 0 of the double-sided limiter that the input quantity X lies within the interval.

r20272 BO: LVM 0 input quantity below interval QL / LVM 0 X below QL

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-	-	-

Description: 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 <= M - L + HY.

p20273 LVM 0 run-time group / LVM 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance LVM 0 of the double-sided limiter is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20274 LVM 0 run sequence / LVM 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
0	7999	720

Description: Setting parameter for the run sequence of instance LVM 0 within the run-time group set in p20273.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20275 CI: LVM 1 input X / LVM 1 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity X of instance LVM 1 of the double-sided limiter.

p20276 LVM 1 interval average value M / LVM 1 avg value M

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the interval average M of instance LVM 1 of the double-sided limiter.

p20277 LVM 1 interval limit L / LVM 1 limit L

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for the interval limit L of instance LVM 1 of the double-sided limiter.

p20278 LVM 1 hyst HY / LVM 1 hyst HY

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-340.28235E36	340.28235E36	0.0000

Description: Setting parameter for hysteresis HY of instance LVM 1 of the double-sided limiter.

r20279 BO: LVM 1 input quantity above interval QU / LVM 1 X above QU

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter of instance LVM 1 of the double-sided limiter that input quantity X was at least once X > M + L and X is >= M + L - HY.

r20280 BO: LVM 1 input quantity within interval QM / LVM 1 X within QM

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter of instance LVM 1 of the double-sided limiter that the input quantity X lies within the interval.

r20281 BO: LVM 1 input quantity below interval QL / LVM 1 X below QL

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter of instance LVM 1 of the double-sided limiter that input quantity X was at least once X < M - L and X is <= M - L + HY.

p20282 LVM 1 run-time group / LVM 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance LVM 1 of the double-sided limiter is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20283 LVM 1 run sequence / LVM 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7270
Min	**Max**	**Factory setting**
0	7999	730

Description: Setting parameter for the run sequence of instance LVM 1 within the run-time group set in p20282.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20284 CI: DIF 0 input X / DIF 0 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity X of instance DIF 0 of the differentiating element.

p20285 DIF 0 differentiating time constant in ms / DIF 0 T_diff ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
Min	**Max**	**Factory setting**
0.00	340.28235E36	0.00

Description: Sets the differentiating time constant Td in milliseconds of instance DIF 0 of the differentiating element.

r20286 CO: DIF 0 output Y / DIF 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output quantity Y of instance DIF 0 of the differentiating element.

p20287 DIF 0 run-time group / DIF 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance DIF 0 of the differentiating element is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20288 DIF 0 run sequence / DIF 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7264
Min	**Max**	**Factory setting**
0	32000	750

Description: Setting parameter for the run sequence of instance DIF 0 within the run-time group set in p20287.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20300 BI: NOT 4 input I / NOT 4 input I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity I of instance NOT 4 of the inverter.

r20301 BO: NOT 4 inverted output / NOT 4 inv output

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output of instance NOT 4 of the inverter.

p20302 NOT 4 run-time group / NOT 4 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 4 of the inverter is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20303 NOT 4 run sequence / NOT 4 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
0	32000	770

Description: Setting parameter for the run sequence of instance NOT 4 within the run-time group set in p20302.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20304 BI: NOT 5 input I / NOT 5 input I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantity I of instance NOT 5 of the inverter.

r20305 BO: NOT 5 inverted output / NOT 5 inv output

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output of instance NOT 5 of the inverter.

p20306 NOT 5 run-time group / NOT 5 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 5 of the inverter is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4

5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20307 NOT 5 run sequence / NOT 5 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7216
Min	**Max**	**Factory setting**
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

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
-	-	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

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
-	-	-

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

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
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

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7220
Min	**Max**	**Factory setting**
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.

p20312[0...1] CI: NCM 0 inputs / NCM 0 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7225
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities X0 and X1 of instance NCM 0 of the numeric comparator.

Index:
[0] = Input X0
[1] = Input X1

r20313 BO: NCM 0 output QU / NCM 0 output QU

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7225
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity QU of instance NCM 0 of the numeric comparator.
QU is only set if X0 > X1.

r20314 BO: NCM 0 output QE / NCM 0 output QE

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7225
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity QE of instance NCM 0 of the numeric comparator.
QE is only set if X0 = X1.

r20315 BO: NCM 0 output QL / NCM 0 output QL

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7225
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity QL of instance NCM 0 of the numeric comparator.
QL is only set if X0 < X1.

p20316 NCM 0 run-time group / NCM 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7225
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance NCM 0 of the numeric comparator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20317 NCM 0 run sequence / NCM 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7225
Min	**Max**	**Factory setting**
0	32000	820

Description: Setting parameter for the run sequence of instance NCM 0 within the run-time group set in p20316.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20318[0...1] CI: NCM 1 inputs / NCM 1 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7225
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source of input quantities X0 and X1 of instance NCM 1 of the numeric comparator.

Index:
[0] = Input X0
[1] = Input X1

r20319 BO: NCM 1 output QU / NCM 1 output QU

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7225
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity QU of instance NCM 1 of the numeric comparator.
QU is only set if X0 > X1.

r20320 BO: NCM 1 output QE / NCM 1 output QE

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7225
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity QE of instance NCM 1 of the numeric comparator.
QE is only set if X0 = X1.

r20321 BO: NCM 1 output QL / NCM 1 output QL

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7225
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for binary quantity QL of instance NCM 1 of the numeric comparator.
QL is only set if X0 < X1.

p20322 NCM 1 run-time group / NCM 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7225
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance NCM 1 of the numeric comparator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20323 NCM 1 run sequence / NCM 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7225
Min	**Max**	**Factory setting**
0	32000	830

Description: Setting parameter for the run sequence of instance NCM 1 within the run-time group set in p20322.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20324[0...1] BI: RSR 2 inputs / RSR 2 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for set input S and reset input R of instance RSR 2 of the RS flipflop.

Index:
[0] = Set S
[1] = Reset R

r20325 BO: RSR 2 output Q / RSR 2 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output Q of instance RSR 2 of the RS flipflop

r20326 BO: RSR 2 inverted output QN / RSR 2 inv outp QN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for inverted output QN of instance RSR 2 of the RS flipflop.

p20327 RSR 2 run-time group / RSR 2 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
1	9999	9999

Description: Setting parameter for the run-time group in which instance RSR 2 of the RS flipflop is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20328 RSR 2 run sequence / RSR 2 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
0	7999	850

Description: Setting parameter for the run sequence of instance RSR 2 within the run-time group set in p20327.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20329[0...3] BI: DFR 2 inputs / DFR 2 inputs

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for trigger input I, D input D, set input S, and reset input R of instance DFR 2 of the D flipflop.

Index:
[0] = Trigger input I
[1] = D input D
[2] = Set S
[3] = Reset R

r20330 BO: DFR 2 output Q / DFR 2 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output Q of instance DFR 2 of the D flipflop.

r20331 BO: DFR 2 inverted output QN / DFR 2 inv outp QN

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the inverted output QN of instance DFR 2 of the D flipflop.

p20332	DFR 2 run-time group / DFR 2 RTG		
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
	Min	**Max**	**Factory setting**
	1	9999	9999

Description: Setting parameter for the run-time group in which instance DFR 2 of the D flipflop is to be called.

Value:
1: Run-time group 1
2: Run-time group 2
3: Run-time group 3
4: Run-time group 4
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20333	DFR 2 run sequence / DFR 2 RunSeq		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7240
	Min	**Max**	**Factory setting**
	0	32000	870

Description: Setting parameter for the run-time group of instance DFR 2 within the run-time group set in p20332.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20334	BI: PDE 2 input pulse I / PDE 2 inp_pulse I		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the input pulse I of instance PDE 2 of the closing delay device.

p20335	PDE 2 pulse delay time in ms / PDE 2 t_del ms		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
	Min	**Max**	**Factory setting**
	0.00	5400000.00	0.00

Description: Setting parameter for pulse delay time T in milliseconds of instance PDE 2 of the closing delay device.

r20336	BO: PDE 2 output Q / PDE 2 output Q		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display parameter for output pulse Q of instance PDE 2 of the closing delay device.

p20337	PDE 2 run-time group / PDE 2 RTG		
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
	Min	**Max**	**Factory setting**
	5	9999	9999

Description: Setting parameter for the run-time group in which instance PDE 2 of the closing delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20338	PDE 2 run sequence / PDE 2 RunSeq		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
	Min	**Max**	**Factory setting**
	0	32000	890

Description: Setting parameter for the run sequence of instance PDE 2 within the run-time group set in p20337.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20339	BI: PDE 3 input pulse I / PDE 3 inp_pulse I		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the input pulse I of instance PDE 3 of the closing delay device.

p20340	PDE 3 pulse delay time in ms / PDE 3 t_del ms		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
	Min	**Max**	**Factory setting**
	0.00	5400000.00	0.00

Description: Setting parameter for pulse delay time T in milliseconds of instance PDE 3 of the closing delay device.

r20341	BO: PDE 3 output Q / PDE 3 output Q		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display parameter for output pulse Q of instance PDE 3 of the closing delay device.

p20342 PDE 3 run-time group / PDE 3 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
Min	**Max**	**Factory setting**
5	9999	9999

Description: 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

p20343 PDE 3 run sequence / PDE 3 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7232
Min	**Max**	**Factory setting**
0	32000	900

Description: Setting parameter for the run sequence of instance PDE 3 within the run-time group set in p20342.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20344 BI: PDF 2 input pulse I / PDF 2 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance PDF 2 of the breaking delay device.

p20345 PDF 2 pulse extension time in ms / PDF 2 t_ext ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
0.00	5400000.00	0.00

Description: Setting parameter for pulse extension time T in milliseconds of instance PDF 2 of the breaking delay device.

r20346 BO: PDF 2 output Q / PDF 2 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PDF 2 of the breaking delay device.

p20347 PDF 2 run-time group / PDF 2 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PDF 2 of the breaking delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20348 PDF 2 run sequence / PDF 2 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
0	32000	920

Description: Setting parameter for the run sequence of instance PDE 2 within the run-time group set in p20347.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20349 BI: PDF 3 input pulse I / PDF 3 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance PDF 3 of the breaking delay device.

p20350 PDF 3 pulse extension time in ms / PDF 3 t_ext ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
0.00	5400000.00	0.00

Description: Setting parameter for pulse extension time T in milliseconds of instance PDF 3 of the breaking delay device.

r20351 BO: PDF 3 output Q / PDF 3 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance PDF 3 of the breaking delay device.

p20352 PDF 3 run-time group / PDF 3 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance PDF 3 of the breaking delay device is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20353 PDF 3 run sequence / PDF 3 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7233
Min	**Max**	**Factory setting**
0	32000	930

Description: 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.

p20354 BI: MFP 2 input pulse I / MFP 2 inp_pulse I

Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the input pulse I of instance MFP 2 of the pulse generator.

p20355 MFP 2 pulse duration in ms / MFP 2 pulse_dur ms

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
0.00	5400000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance MFP 2 of the pulse generator.

r20356 BO: MFP 2 output Q / MFP 2 output Q

Access level: 3	**Calculated:** -	**Data type:** Unsigned32
Can be changed: -	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for output pulse Q of instance MFP 2 of the pulse generator.

p20357	MFP 2 run-time group / MFP 2 RTG		
	Access level: 3	**Calculated:** -	**Data type:** Integer16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
	Min	**Max**	**Factory setting**
	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

p20358	MFP 2 run sequence / MFP 2 RunSeq		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned16
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
	Min	**Max**	**Factory setting**
	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.

p20359	BI: MFP 3 input pulse I / MFP 3 inp_pulse I		
	Access level: 3	**Calculated:** -	**Data type:** U32 / Binary
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
	Min	**Max**	**Factory setting**
	-	-	0

Description: Sets the signal source for the input pulse I of instance MFP 3 of the pulse generator.

p20360	MFP 3 pulse duration in ms / MFP 3 pulse_dur ms		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: T	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
	Min	**Max**	**Factory setting**
	0.00	5400000.00	0.00

Description: Setting parameter for pulse duration T in milliseconds of instance MFP 3 of the pulse generator.

r20361	BO: MFP 3 output Q / MFP 3 output Q		
	Access level: 3	**Calculated:** -	**Data type:** Unsigned32
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
	Min	**Max**	**Factory setting**
	-	-	-

Description: Display parameter for output pulse Q of instance MFP 3 of the pulse generator.

p20362 MFP 3 run-time group / MFP 3 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which the instance MFP 3 of the pulse generator is to be called.

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20363 MFP 3 run sequence / MFP 3 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7230
Min	**Max**	**Factory setting**
0	32000	960

Description: Setting parameter for the run sequence of instance MFP 3 within the run-time group set in p20362.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20372 CI: PLI 0 input X / PLI 0 input X

Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7226
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for input X of the polyline (20 breakpoints) of instance PLI 0.

r20373 CO: PLI 0 output Y / PLI 0 output Y

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7226
Min	**Max**	**Factory setting**
-	-	-

Description: Display parameter for the output quantity Y of the polyline (20 breakpoints) of instance PLI 0

p20374[0...19] PLI 0 X-coordinate, A breakpoint / PLI 0 X-coordinate

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7226
Min	**Max**	**Factory setting**
-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

p20375[0...19] PLI 0 Y-coordinate, B breakpoint / PLI 0 Y-coordinate

Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7226
Min	**Max**	**Factory setting**
-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
[16] = Breakpoint 16
[17] = Breakpoint 17
[18] = Breakpoint 18
[19] = Breakpoint 19

p20376 PLI 0 run-time group / PLI 0 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7226
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance PLI 0 of the polyline is to be called

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20377 PLI 0 run sequence / PLI 0 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7226
Min	**Max**	**Factory setting**
0	32000	980

Description: Setting parameter for the run sequence of instance PLI 0 within the run-time group set in p20376.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20378	**CI: PLI 1 input X / PLI 1 input X**		
	Access level: 3	**Calculated:** -	**Data type:** U32 / FloatingPoint32
	Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7226
	Min	**Max**	**Factory setting**
	-	-	0
Description:	Sets the signal source for input X of the polyline (20 breakpoints) of instance PLI 1.		

r20379	**CO: PLI 1 output Y / PLI 1 output Y**		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7226
	Min	**Max**	**Factory setting**
	-	-	-
Description:	Display parameter for the output quantity Y of the polyline (20 breakpoints) of instance PLI 1		

p20380[0...19]	**PLI 1 X-coordinate, A breakpoint / PLI 1 X-coordinate**		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7226
	Min	**Max**	**Factory setting**
	-340.28235E36	340.28235E36	0.0000
Description:	Sets the x-coordinates for the breakpoints (A0 ... A19) of the polyline (20 breakpoints) of instance PLI 1.		

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

p20381[0...19]	**PLI 1 Y-coordinate, B breakpoint / PLI 1 Y-coordinate**		
	Access level: 3	**Calculated:** -	**Data type:** FloatingPoint32
	Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 7226
	Min	**Max**	**Factory setting**
	-340.28235E36	340.28235E36	0.0000
Description:	Sets the y-coordinates for the breakpoints (B0 ... B19) of the polyline (20 breakpoints) of instance PLI 1.		

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

p20382 PLI 1 run-time group / PLI 1 RTG

Access level: 3	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7226
Min	**Max**	**Factory setting**
5	9999	9999

Description: Setting parameter for the run-time group in which instance PLI 1 of the polyline is to be called

Value:
5: Run-time group 5
6: Run-time group 6
9999: Do not calculate

p20383 PLI 1 run sequence / PLI 1 RunSeq

Access level: 3	**Calculated:** -	**Data type:** Unsigned16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** 7226
Min	**Max**	**Factory setting**
0	32000	990

Description: Setting parameter for the run sequence of instance PLI 1 within the run-time group set in p20382.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p31020 Multi-zone control interconnection / Zone_ctrl intercon

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

Description: Setting for interconnecting multi-zone control

Value:
0: Removing the multi-zone control interconnection
1: Interconnecting multi-zone control

Notice: When multi-zone control is interconnected, outputs r31024 and r31027 are always connected to index 0 of parameters p2253 and p2264. Any changes made to the command data set (CDS) in p2253 and p2264 are ignored.

Note: For p31020 = 0:

The following BICO interconnections are automatically removed:

- p31023[0] = 0
- p31023[2] = 0
- p31026[0] = 0
- p31026[1] = 0
- p2253[0] = 0
- p2264[0] = 0

For p31020 = 1:

The following BICO interconnections are automatically established:

- p31023[0] = r0755[0]
- p31023[2] = r0755[1]
- p31026[0] = r0755[2]
- p31026[1] = r0755[3]
- p2253[0] = r31024
- p2264[0] = r31027

p31021 Multi-zone control configuration / Zone_ctrl config

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	2	0

Description: Sets the configuration for multi-zone control.

Value:
0: Setpoint 1 / multiple actual values
1: Two zones / highest value setting
2: Two zones / lowest value setting

Note: For p31021 = 0:

The setpoint 1 and the output of the actual value processing are forwarded to the technology controller.

For p31021 = 1:

The highest value setting ensures that the actual values of the two zones remain below their respective setpoint.

For p31021 = 2:

The lowest value setting ensures that the actual values of the two zones remain above their respective setpoint.

p31022 Multi-zone control for actual value processing / Zone_ctrl act proc

Access level: 2	**Calculated:** -	**Data type:** Integer16
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
0	11	0

Description: Sets the processing method for the multi-zone control actual value (r31027).

Value:
0: Only actual value 1
1: Only actual value 2
2: Only actual value 3
3: Difference (actual value 1, 2)
4: Sum (actual value 1, 2)
5: Sum (actual value 1, 2 and 3)
6: Mean value (actual value 1, 2)
7: Mean value (actual value 1, 2 and 3)
8: Minimum (actual value 1, 2)
9: Minimum (actual value 1, 2 and 3)
10: Maximum (actual value 1, 2)
11: Maximum (actual value 1, 2 and 3)

Note: For p31022 = 0, 1, 2:

Only actual value 1, 2, or 3 is used as r31027.

For p31022 = 3:

The difference between actual values 1 and 2 is used as r31027.

For p31022 = 4:

The sum of actual values 1 and 2 is used as r31027.

For p31022 = 5:

The sum of actual values 1, 2, and 3 is used as r31027.

For p31022 = 6:

The mean value of actual values 1 and 2 is used as r31027.

For p31022 = 7:
The mean value of actual values 1, 2 and 3 is used as r31027.
For p31022 = 8:
The lower value of actual values 1 and 2 is used as r31027.
For p31022 = 9:
The lowest value of actual values 1, 2, and 3 is used as r31027.
For p31022 = 10:
The higher value of actual values 1 and 2 is used as r31027.
For p31022 = 11:
The highest value of actual values 1, 2, and 3 is used as r31027.

p31023[0...3] CI: Multi-zone control setpoint input / Zone_ctrl setp inp

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the multi-zone control setpoints.

r31024 CO: Multi-zone control setpoint output / Zone_ctrl set outp

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the relevant setpoint at the multi-zone control output.

p31025 BI: Multi-zone control day/night switchover / Zone_ctl day_night

Access level: 2	**Calculated:** -	**Data type:** U32 / Binary
Can be changed: T	**Scaling:** -	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the day/night multi-zone control switchover.

p31026[0...2] CI: Multi-zone control actual-value input / Zon_ctrl act inp

Access level: 2	**Calculated:** -	**Data type:** U32 / FloatingPoint32
Can be changed: T	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
-	-	0

Description: Sets the signal source for the multi-zone control actual values.

r31027 CO: Multi-zone control actual-value output / Zon_ctrl act outp

Access level: 2	**Calculated:** -	**Data type:** FloatingPoint32
Can be changed: -	**Scaling:** PERCENT	**Dyn. index:** -
Unit group: -	**Unit selection:** -	**Func. diagram:** -
Min	**Max**	**Factory setting**
- [%]	- [%]	- [%]

Description: Displays the relevant actual value at the multi-zone control output.

r61000[0...239] PROFINET Name of Station / PN Name of Station

CU230P-2_PN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned8
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2410
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays PROFINET Name of Station.

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

r61001[0...3] PROFINET IP of Station / PN IP of Station

CU230P-2_PN			
	Access level: 3	**Calculated:** -	**Data type:** Unsigned8
	Can be changed: -	**Scaling:** -	**Dyn. index:** -
	Unit group: -	**Unit selection:** -	**Func. diagram:** 2410
	Min	**Max**	**Factory setting**
	-	-	-

Description: Displays PROFINET IP of Station.

2.3 Parameters for data sets

2.3.1 Command Data Sets (CDS)

Product: SINAMICS G120, Version: 4711200, Language: eng, Type: CDS

p0641[0...n]	CI: Current limit, variable / Curr lim var
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 / Enable operation
p0854[0...n]	BI: Control by PLC/no control by PLC / Master ctrl by PLC
p1000[0...n]	Speed setpoint selection / n_set 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
p1042[0...n]	CI: Motorized potentiometer automatic setpoint / Mop auto setpoint
p1043[0...n]	BI: Motorized potentiometer accept setting value / MotP acc set val
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
p1055[0...n]	BI: Jog bit 0 / Jog bit 0
p1056[0...n]	BI: Jog bit 1 / Jog bit 1
p1070[0...n]	CI: Main setpoint / Main setpoint
p1071[0...n]	CI: Main setpoint scaling / Main setp scal
p1075[0...n]	CI: Supplementary setp / 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
p1108[0...n]	BI: Total setpoint selection / Total setp sel
p1109[0...n]	CI: Total setpoint / Total setp
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
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
p1140[0...n]	BI: Enable ramp-function generator/inhibit ramp-function generator / Enable RFG
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
p1144[0...n]	CI: Ramp-function generator setting value / RFG setting value
p1201[0...n]	BI: Flying restart enable signal source / Fly_res enab S_src

p1230[0...n]	BI: DC braking activation / DC brake act
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: 1st acknowledge faults / 1st acknowledge
p2104[0...n]	BI: 2nd acknowledge faults / 2nd acknowledge
p2105[0...n]	BI: 3rd acknowledge faults / 3rd 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 precontrol signal / Tec_ctr prectr_sig
p2290[0...n]	BI: Technology controller limiting enable / Tec_ctrl lim enab
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
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
p3230[0...n]	CI: Load monitoring speed actual value / Load monit n_act
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
p3340[0...n]	BI: Limit switch start / Lim switch start
p3342[0...n]	BI: Limit switch plus / Lim switch plus
p3343[0...n]	BI: Limit switch minus / Lim switch minus

2.3.2 Drive Data Sets (DDS)

Product: SINAMICS G120, Version: 4711200, Language: eng, Type: DDS

p0340[0...n]	Automatic calculation motor/control parameters / Calc auto par
p0640[0...n]	Current limit / Current limit
p0644[0...n]	Current limit excitation induction motor / Imax excitat ASM
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]	Setpoint channel speed limit / Setp_chan n_lim
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
p1262[0...n]	Bypass dead time / Bypass t_dead
p1270[0...n]	Flying restart configuration / Fly restart config
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
p1281[0...n]	Vdc controller configuration / Vdc ctrl config
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
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
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
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
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
p1382[0...n]	Saturation limit for flux setpoint / Max FluxSaturation
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
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
p1496[0...n]	Acceleration precontrol scaling / a_prectrl 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/motoring scaling / M_max up/mot 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
r1566[0...n]	Flux reduction torque factor transition value / Flux red M trans
p1567[0...n]	Magnetization rate time scaling / Mag Tv scale
p1570[0...n]	CO: Flux setpoint / Flex setp
p1574[0...n]	Voltage reserve dynamic / U_reserve dyn
p1575[0...n]	Voltage target value limit / U_tgt val lim
p1578[0...n]	Flux reduction flux decrease time constant / Flux red dec T
p1579[0...n]	Flux reduction flux build-up time constant / Flux red incr T
p1580[0...n]	Efficiency optimization / Efficiency opt.
p1581[0...n]	Flux reduction factor / Flux red factor
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
p1592[0...n]	Flux controller integral time / Flux controller Tn
p1595[0...n]	Field weakening controller additional setpoint / Field_ctr add_setp
p1596[0...n]	Field weakening controller integral-action time / Field_ctrl Tn
p1601[0...n]	Current injection ramp time / I_inject t_ramp
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
p1703[0...n]	Isq current controller precontrol 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
p1720[0...n]	Current controller d axis p gain / Id_ctrl Kp
p1722[0...n]	Current controller d axis integral time / I_ctrl d-axis Tn
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_chgSnsorl
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
p1769[0...n]	Motor model changeover delay time closed-loop control / MotMod t cl_ctrl
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
p1998[0...n]	PolID circle center point / PolID circ center
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
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
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
p2165[0...n]	Load monitoring stall monitoring upper threshold / Stall_mon up thr
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
p2168[0...n]	Load monitoring stall monitoring torque threshold / Stall_mon M_thresh
p2170[0...n]	Current threshold value / I_thres
p2171[0...n]	Current threshold value reached delay time / I_thresh rch t_del
p2172[0...n]	DC link voltage threshold value / Vdc thresh val
p2173[0...n]	DC link voltage comparison delay time / t_del Vdc
p2175[0...n]	Motor blocked speed threshold / Mot lock n_thresh
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_ld 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
p2191[0...n]	Load monitoring torque threshold no load / M_thresh no load
p2192[0...n]	Load monitoring delay time / Load monit t_del
p2193[0...n]	Load monitoring configuration / Load monit config
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
p2370[0...n]	Closed-loop cascade control enable / Csc_ctrl enab
p2390[0...n]	Speed start of hibernation mode / Hib mode n_start
p2391[0...n]	Hibernation mode delay time / Hib mode t_delay
p2393[0...n]	Hibernation mode restart speed relative w/o techn controller / Hib start w/o tec
p2394[0...n]	Hibernation mode boost time period / Hib mode t_boost
p2395[0...n]	Hibernation mode boost speed / Hib mode n_boost
p2396[0...n]	Hibernation mode max. shutdown time / Hib t_off max
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
p3315[0...n]	Efficiency optimization 2 minimum flux limit value / Min flux lim val
p3316[0...n]	Efficiency optimization 2 maximum flux limit value / Max flux lim val
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
p3855[0...n]	DC quantity controller configuration / Rect_ctrl config
p3856[0...n]	Compound braking current / Compound I_brake
p3857[0...n]	DC quantity controller P gain / DC_ctrl Kp
p3858[0...n]	DC quantity controller integral time / DC_ctrl Tn
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

2.3.3 Motor data sets (MDS)

Product: SINAMICS G120, Version: 4711200, 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
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
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
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
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
r0394[0...n]	Rated motor power / Mot P_rated
r0395[0...n]	Actual stator resistance / R_stator act
r0396[0...n]	Actual rotor resistance / R_rotor act
p0530[0...n]	Bearing version selection / Bearing vers sel
p0531[0...n]	Bearing code number selection / Bearing codeNo sel
p0532[0...n]	Bearing maximum speed / Bearing n_max
p0601[0...n]	Motor temperature sensor type / Mot_temp_sens type
p0604[0...n]	Mot_temp_mod 2/sensor alarm threshold / Mod 2/sens A_thr
p0605[0...n]	Mot_temp_mod 1/2/sensor threshold and temperature value / Mod1/2/sens T_thr
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
p0613[0...n]	Mot_temp_mod 1/3 ambient temperature / Mod 1/3 amb_temp
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 switching on 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 / Mot T_over rotor
p0629[0...n]	Stator resistance reference / R_stator ref
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
p0650[0...n]	Actual motor operating hours / Oper hours motor
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]	PolID technique / PolID technique
r3926[0...n]	Voltage generation alternating base voltage amplitude / U_gen altern base
p5350[0...n]	Mot_temp_mod 1/3 boost factor at standstill / Standst boost_fact
p5390[0...n]	Mot_temp_mod 1/3 alarm threshold / A thresh
p5391[0...n]	Mot_temp_mod 1/3 fault threshold / F thresh

2.3.4 Power unit Data Sets (PDS)

Product: SINAMICS G120, Version: 4711200, 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
p0251[0...n]	Operating hours counter power unit fan / PU fan t_oper
p0254[0...n]	Operating hours counter power unit fan inside the converter / PU inner fan t_op

2.4 BICO parameters (connectors/binectors)

2.4.1 Binector inputs (BI)

Product: SINAMICS G120, Version: 4711200, Language: eng, Type: BI

p0043	BI: Enable energy usage display / Enab energy usage
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...2]	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 / Enable operation
p0854[0...n]	BI: Control by PLC/no control by PLC / Master ctrl by PLC
p0860	BI: Line contactor feedback signal / Line contact feedb
p0870	BI: Close main contactor / Close main cont
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 / Enable RFG
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
p1266	BI: Bypass control command / Bypass command
p1269[0...1]	BI: Bypass switch feedback signal / Bypass FS
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: 1st acknowledge faults / 1st acknowledge
p2104[0...n]	BI: 2nd acknowledge faults / 2nd acknowledge
p2105[0...n]	BI: 3rd acknowledge faults / 3rd 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
p2290[0...n]	BI: Technology controller limiting enable / Tec_ctrl lim enab
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
p3340[0...n]	BI: Limit switch start / Lim switch start
p3342[0...n]	BI: Limit switch plus / Lim switch plus
p3343[0...n]	BI: Limit switch minus / Lim switch minus
p3880	BI: ESM activation signal source / ESM act s s
p3883	BI: ESM direction of rotation signal source / ESM rot dir s s
p5614	BI: Pe set switching on inhibited signal source / Pe sw-on_inh s_src
p8542[0...15]	BI: Active STW1 in the BOP/IOP manual mode / STW1 act OP
p8558	BI: Select IOP manual mode / Sel IOP man mode
p8785	BI: CAN status word bit 8 / Status word bit 8
p8786	BI: CAN status word bit 14 / Status word bit 14
p8787	BI: CAN status word bit 15 / Status word bit 15
p11000	BI: Free tec_ctrl 0 enable / Ftec0 enab
p11100	BI: Free tec_ctrl 1 enable / Ftec1 enab
p11200	BI: Free tec_ctrl 2 enable / Ftec2 enab
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
p31025	BI: Multi-zone control day/night switchover / Zone_ctl day_night

2.4.2 Connector inputs (CI)

Product: SINAMICS G120, Version: 4711200, Language: eng, Type: CI

p0641[0...n]	CI: Current limit, variable / Curr lim var
p0771[0...2]	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 setp / 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
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...16]	CI: PROFIdrive PZD send word / PZD send word
p2061[0...15]	CI: PROFIdrive 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 precontrol 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
p2310	CI: Technology controller Kp adaptation input value signal source / Kp adapt inp s_src
p2315	CI: Technology controller Kp adaptation scaling signal source / Kp adapt scal s_s
p2317	CI: Technology controller Tn adaptation input value signal source / Tn adapt inp s_src
p3230[0...n]	CI: Load monitoring speed actual value / Load monit n_act
p3884	CI: ESM setpoint technology controller / ESM setp tech_ctrl
p8543	CI: Active speed setpoint in the BOP/IOP manual mode / N_act act OP
p8746[0...15]	CI: CAN free PZD send objects 16 bit / Free PZD send 16
p8748[0...7]	CI: CAN free PZD send objects 32 bit / Free PZD send 32
p11053	CI: Free tec_ctrl 0 setpoint signal source / Ftec0 setp s_s
p11064	CI: Free tec_ctrl 0 actual value signal source / Ftec0 act v s_s
p11097	CI: Free tec_ctrl 0 limit maximum signal source / Ftec0 lim max s_s
p11098	CI: Free tec_ctrl 0 limit minimum signal source / Ftec0 lim min s_s
p11099	CI: Free tec_ctrl 0 limit offset signal source / Ftec0 lim offs
p11153	CI: Free tec_ctrl 1 setpoint signal source / Ftec1 setp s_s
p11164	CI: Free tec_ctrl 1 actual value signal source / Ftec1 act v s_s
p11197	CI: Free tec_ctrl 1 limit maximum signal source / Ftec1 lim max s_s
p11198	CI: Free tec_ctrl 1 limit minimum signal source / Ftec1 lim min s_s
p11199	CI: Free tec_ctrl 1 limit offset signal source / Ftec1 lim offs
p11253	CI: Free tec_ctrl 2 setpoint signal source / Ftec2 setp s_src
p11264	CI: Free tec_ctrl 2 actual value signal source / Ftec2 act v s_s
p11297	CI: Free tec_ctrl 2 limit maximum signal source / Ftec2 lim max s_s
p11298	CI: Free tec_ctrl 2 limit minimum signal source / Ftec2 lim min s_s
p11299	CI: Free tec_ctrl 2 limit offset signal source / Ftec2 lim offs
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
p31023[0...3]	CI: Multi-zone control setpoint input / Zone_ctrl setp inp
p31026[0...2]	CI: Multi-zone control actual-value input / Zon_ctrl act inp

2.4.3 Binector outputs (BO)

Product: SINAMICS G120, Version: 4711200, Language: eng, Type: BO

r0751.0...11	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
r8413.0...1	BO: RTC DTC1 output / RTC DTC1 output
r8423.0...1	BO: RTC DTC2 output / RTC DTC2 output
r8433.0...1	BO: RTC DTC3 output / RTC DTC3 output
r8540.0...15	BO: STW1 from IOP in the manual mode / STW1 IOP
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, Version: 4711200, Language: eng, Type: CO

r0021	CO: Actual speed smoothed / Actual speed
r0025	CO: Output voltage smoothed / Output voltage
r0026	CO: DC link voltage smoothed / DC link voltage
r0027	CO: Absolute actual current smoothed / Motor current
r0032	CO: Active power actual value smoothed / Power
r0034	CO: Motor utilization thermal / Mot_util therm
r0035	CO: Motor temperature / Mot temp
r0036	CO: Power unit overload I2t / PM overload I2t
r0037[0...19]	CO: Power unit temperatures / PM temperatures
r0039[0...2]	CO: Energy display / Energy display
r0042[0...2]	CO: Process energy display / Proc energy disp
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: Actual speed / Actual speed
r0064	CO: Speed controller system deviation / n_ctrl sys dev
r0066	CO: Output frequency / f_outp
r0067	CO: Output current maximum / Current max
r0068[0...1]	CO: Absolute current actual value / I_act abs val
r0069[0...8]	CO: Phase current actual value / I_phase act val
r0070	CO: Actual DC link voltage / Vdc act val
r0072	CO: Output voltage / U_output
r0074	CO: Modulat_depth / Mod_depth
r0075	CO: Current setpoint field-generating / Id_set
r0076	CO: Current actual value field-generating / Id_act
r0077	CO: Current setpoint torque-generating / Iq_set
r0078	CO: Current actual value torque-generating / Iq_act
r0079	CO: Torque setpoint / M_set
r0080[0...1]	CO: Torque actual value / Actual torque
r0082[0...2]	CO: Active power actual value / P_act
r0083	CO: Flux setpoint / Flex setp
r0084[0...1]	CO: Flux actual value / Actual flux
r0087	CO: Actual power factor / Cos phi act
r0289	CO: Maximum power unit output current / PU I_outp max
r0752[0...3]	CO: CU analog inputs input voltage/current actual / CU AI U/I_inp act
r0755[0...3]	CO: CU analog inputs actual value in percent / CU AI value in %
p0791[0...1]	CO: Fieldbus analog outputs / Fieldbus AO
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 / Speed fixed setp

r1045	CO: Mot. potentiometer speed setp. in front of ramp-fct. gen. / Mop n_set bef RFG
r1050	CO: Motorized potentiometer setpoint after ramp-function generator / Mot poti setpoint
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
r1170	CO: Speed controller setpoint sum / Speed setpoint 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
r1438	CO: Speed controller speed setpoint / n_ctrl n_set
r1445	CO: Actual speed smoothed / n_act smooth
r1468	CO: Speed controller P-gain effective / n_ctr Kp eff
r1482	CO: Speed controller I torque output / n_ctrl I-M_outp
r1493	CO: Moment of inertia total, scaled / M_inert tot scal
r1508	CO: Torque setpoint before supplementary torque / M_set bef. M_suppl
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/motoring scaling / M_max up/mot 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
r1568[0...5]	CO: Synchronous reluctance motor flux channel / RESM flux channel
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
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: PROFIdrive 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 system deviation / Tec_ctrl sys_dev
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
r2316	CO: Technology controller, Kp adaptation output / Kp adapt outp
r2322	CO: Technology controller Tn adaptation output / Tn adapt output
r2344	CO: Technology controller last speed setpoint (smoothed) / Tec_ctrl n_setp_sm
r2397[0...1]	CO: Hibernation mode output speed actual / Hib n_outp act
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
r8541	CO: Speed setpoint from the IOP in the manual mode / n_set IOP
r8745[0...15]	CO: CAN free PZD receive objects 16 bit / Free PZD recv 16
r8747[0...7]	CO: CAN free PZD receive objects 32 bit / Free PZD recv 32
r8762	CO: CAN operating mode display / Op mode display
r8784	CO: CAN status word / Status word
r8792[0]	CO: CAN velocity mode I16 setpoint / Vel mod I16 set
r8796[0]	CO: CAN profile velocity mode I32 setpoints / Pr vel mo I32 set
r8797[0]	CO: CAN profile torque mode I16 setpoints / Pr Tq mod I16 set
r11060	CO: Free tec_ctrl 0 setpoint after ramp-function generator / Ftec0 setp aft RFG
r11072	CO: Free tec_ctrl 0 actual value after limiter / Ftec0 act v af lim
r11073	CO: Free tec_ctrl 0 system deviation / Ftec0 sys dev
p11091	CO: Free tec_ctrl 0 limit maximum / Ftec0 lim max
p11092	CO: Free tec_ctrl 0 limit minimum / Ftec0 lim min
r11094	CO: Free tec_ctrl 0 output signal / Ftec0 out_sig
r11160	CO: Free tec_ctrl 1 setpoint after ramp-function generator / Ftec1 setp aft RFG
r11172	CO: Free tec_ctrl 1 actual value after limiter / Ftec1 act v af lim
r11173	CO: Free tec_ctrl 1 system deviation / Ftec1 sys dev
p11191	CO: Free tec_ctrl 1 limit maximum / Ftec1 lim max

p11192	CO: Free tec_ctrl 1 limit minimum / Ftec1 lim min
r11194	CO: Free tec_ctrl 1 output signal / Ftec1 out_sig
r11260	CO: Free tec_ctrl 2 setpoint after ramp-function generator / Ftec2 setp aft RFG
r11272	CO: Free tec_ctrl 2 actual value after limiter / Ftec2 act v af lim
r11273	CO: Free tec_ctrl 2 system deviation / Ftec2 sys dev
p11291	CO: Free tec_ctrl 2 limit maximum / Ftec2 lim max
p11292	CO: Free tec_ctrl 2 limit minimum / Ftec2 lim min
r11294	CO: Free tec_ctrl 2 output signal / Ftec2 out_sig
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
r31024	CO: Multi-zone control setpoint output / Zone_ctrl set outp
r31027	CO: Multi-zone control actual-value output / Zon_ctrl act outp

2.4.5 Connector/binector outputs (CO/BO)

Product: SINAMICS G120, Version: 4711200, Language: eng, Type: CO/BO

r0046.0...31	CO/BO: Missing enable signal / 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...12	CO/BO: CU digital inputs status / CU DI status
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
r0863.0...1	CO/BO: Drive coupling status word/control word / CoupleZSW/STW
r0898.0...10	CO/BO: Control word sequence control / STW seq_ctrl
r0899.0...11	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
r1204.0...15	CO/BO: Flying restart U/f control status / FlyRest Uf st
r1205.0...21	CO/BO: Flying restart vector control status / FlyRest vector st
r1205.0...20	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
r1261.0...11	CO/BO: Bypass control/status word / Bypass STW / ZSW
r1407.0...23	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
r1992.0...15	CO/BO: PolID diagnostics / PolID diag
r2129.0...15	CO/BO: Faults/alarms trigger word / F/A trigger word
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
r2198.4...12	CO/BO: Status word monitoring 2 / ZSW monitor 2
r2199.0...5	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...13	CO/BO: Technology controller status word / Tec_ctrl status
r2379.0...7	CO/BO: Closed-loop cascade control status word / Csc_ctrl ZSW
r2399.0...8	CO/BO: Hibernation mode status words / Hib ZSW
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
r3344.0...5	CO/BO: Limit switch status word / Lim sw ZSW
r3859.1	CO/BO: DC quantity control status word / DC_ctrl ZSW
r3859.0...1	CO/BO: Compound braking/DC quantity control status word / Comp-br/DC_ctr ZSW
r3889.0...10	CO/BO: ESM status word / ESM ZSW
r4022.0...3	CO/BO: PM330 digital inputs status / PM330 DI status
r4023.0...3	CO/BO: PM330 digital inputs status inverted / PM330 DI stat inv
r5389.0...8	CO/BO: Mot_temp status word faults/alarms / Mot_temp ZSW F/A
r5613.0...1	CO/BO: Pe energy-saving active/inactive / Pe save act/inact
r7760.0...12	CO/BO: Write protection/know-how protection status / Wr_prot/KHP stat
r8795.0...15	CO/BO: CAN control word / Control word
r9401.0...3	CO/BO: Safely remove memory card status / Mem_card rem stat
r11049.0...11	CO/BO: Free tec_ctrl 0 status word / Ftec0 stat_word
r11149.0...11	CO/BO: Free tec_ctrl 1 status word / Ftec1 stat_word
r11249.0...11	CO/BO: Free tec_ctrl 2 status word / Ftec2 stat_word

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, Version: 4711200, 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
p0791[0...1]	CO: Fieldbus analog outputs / Fieldbus AO
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	Acknowledge drive object faults / Ackn DO faults
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, Version: 4711200, 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
p0791[0...1]	CO: Fieldbus analog outputs / Fieldbus AO
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	Acknowledge drive object faults / Ackn DO faults
p3985	Master control mode selection / PcCtrl mode select
p7761	Write protection / Write protection
p8402[0...8]	RTC daylight saving time setting / RTC DST
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/IP profile / 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, Version: 4711200, 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
p0870	BI: Close main contactor / Close main cont
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
p2006	Reference temperature / Ref temp
p2030	Field bus interface 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
p11026	Free tec_ctrl 0 unit selection / Ftec0 unit sel
p11126	Free tec_ctrl 1 unit selection / Ftec1 unit sel
p11226	Free tec_ctrl 2 unit selection / Ftec2 unit sel

2.6 Quick commissioning (p0010 = 1)

The parameters required for the quick commissioning (p0010 = 1) are shown in Table 2-10:

Table 2-10 Quick commissioning (p0010 = 1)

Par. no.	Name	Access level		Can be changed
p0010	Drive, commissioning parameter filter	1		C(1)T
p0015	Macro drive unit	1		C(1)
p0096	Application class	1		C(1)
p0100	IEC/NEMA mot stds	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	4		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 PM330	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 rotation 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

Table 2-10 Quick commissioning (p0010 = 1), continued

Par. no.	Name	Access level		Can be changed
p1300	Open-loop/closed-loop control operating mode	2		C(1)T
p1500	Torque setpoint selection	2		C(1)T
p1900	Motor data identification and rotating measurement	2		C(1)T
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.

Note

This only applies for the quick commissioning.

Function diagrams 3

Content

3.1 Table of contents

3.2 Explanations on the function diagrams

Function diagrams

Parameters

Symbol	Meaning
Parameter name [Unit] rxxxx[y..z]	Monitoring parameter with unit [Unit] and index range [y..z] or data set [C/D]
Parameter name from ... to [Unit] pxxxx[C/D] (Def)	Setting parameter with min/max value and unit [Unit] data set [C/D] and factory setting (Def) *)

Connectors

Symbol	Meaning
Parameter name pxxxx[y..z] (Def)	Connector input CI with index range [y..z] or data set [C/D] and factory setting (Def) *)
Parameter name [Unit] rxxxx[y..z]	Connector output CO with unit [Unit] and with index range [y..z]

CI: Connector Input
CO: Connector Output
CO/BO: Connector/Binector Output

Binectors

Symbol	Meaning
Parameter name pxxxx[y..z] (Def.y)	Binector input BI with with index range [y..z] or data set [C/D] and factory setting.bit number (Def)
Parameter name rxxxx	Binector output BO

BI: Binector Input
BO: Binector Output

Connectors/binectors

Symbol	Meaning
Parameter name rxxxx rxxxx	Connector/binector output CO/BO

Pre-assigned connectors and binectors

Symbol	Meaning
Parameter name from ... to [Unit] pxxxx[D] (Def)	Setting parameter with min/max value and unit [Unit] data set [D] and factory setting (Def)

Data sets

Symbol	Meaning
pxxxx[C]	Parameter belongs to the Command Data Set (CDS).
pxxxx[D]	Parameter belongs to the Drive Data Set (DDS).
pxxxx[E]	Parameter belongs to the Encoder Data Set (EDS).
pxxxx[M]	Parameter belongs to the Motor Data Set (MDS).
pxxxx[P]	Parameter belongs to the Power unit Data Set (PDS).

Information on parameters, binectors, connectors

Symbol	Meaning
Parameter name	Parameter name (up to 18 characters)
[Unit]	[dimension unit]
rxxxx[y] or rxxxx[y..z] or rxxxx[y].ww or rxxxx.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).
pxxxx[y] or pxxxx[..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).
from ... to	Value range.
(xxxx[y].ww)	Parameter number (xxxx) with Index number [y] and bit number .ww.
(Def)	Factory setting.
(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]

Cross references between diagrams

Symbol	Meaning
Signal path	The function diagrams are sub-divided into signal paths 1 … 8 in order to facilitate orientation.
Text → [aaaa.b]	Text = Unique signal designation aaaa = Signal to target diagram aaa b = Signal to signal path b
[cccc.d] Text →	Text = Unique signal designation cccc = Signal from source diagram cccc d = Signal from signal path d

To "function diagram name" [aaaa.b] = binectors.

Cross references for control bits

Symbol	Meaning
pxxxx [aaaa.b]	pxxxx= Original parameter of signal aaaa = Signal from source diagram aaaa b = Signal from signal path b

*) For some parameters the value for the factory setting is calculated during commissioning for they are dependent on Power Module and motor (see Section 2.1.1 "Calculated").

1	2	3	4	5	6	7	8

Explanations on the function diagrams	fp_1020_97_61.vsd	Function diagram	- 1020 -
Explanation of the symbols (part 1)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-1 1020 – Explanation of the symbols (part 1)

Fig. 3-2 1021 – Explanation of the symbols (part 2)

Pre-assigned connectors and binectors

Fixed percentage values

Fixed value 1 [%]
-10000.00 ... 10000.00 [%]
p2900 [D] (0.00)

or -10 000.00 … 10 000.00 [%]
p2900[D] (0.00)
Fixed value 1 [%] p2900[D]

-10 000.00 … 10 000.00 [%]
p2901[D] (0.00)
Fixed value 2 [%] p2901[D]

p2902[0...14] (0.00)
Fixed values [%] r2902[0...14]

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 %

Fixed speed values

n_set_fixed 1
-210000.000 ... 210000.000 [rpm]
p1001 [D] (0.000)

or -210 000.000 … 210 000.000 [rpm]
p1001[D] (0.000)
n_set_fixed 1 p1001[D]

-210 000.000 … 210 000.000 [rpm]
p1015[D] (0.000)
n_set_fixed 15 p1015[D]

Fixed torque value

Fixed value M [Nm]
-100000.00 ... 100000.00 [Nm]
p2930 [D] (0.00)

or -100 000.00 … 100 000.00 [Nm]
p2930[D] (0.00)
Fixed value M [Nm] p2930[D]

Symbol for monitoring

Monitoring → Axxxxx or Fxxxxx

Monitoring
In the bottom right-hand corner of the diagram.

Symbols for logic functions

NOT element (1)
Logical inversion (negation)

AND element (&)
with logical inversion of an input

OR element (≥1)

Exclusiv-OR/XOR (=1; x_1, x_2, y)
y = 1 when x1 ≠ x2 is.

Comparator (=; x_1, x_2, y)
y = 1 when x1 = x2 is.

R/S flip-flop (S Q, R $\overline{Q}$)
S = setting input
R = reset input
Q = non-inverted output
$\overline{Q}$ = inverted output

Symbols for computational and closed-loop control functions

Sign reversal (x, -1, y)
y = -x

Absolute value generator (x, y)
y = |x|

Divider (x_1, x_2, ÷, y)
$y = \frac{x_1}{x_2}$

Multiplier (x_1, x_2, ×, y)
$y = x_1 \cdot x_2$

Comparator greater than 0 (x, >0, y)
y = 1, if the analog signal x > 0, i.e. is positive.

Differentiator (x, $\frac{d}{dt}$, y)
$y = \frac{dx}{dt}$

Symbols for computational and closed-loop control functions

Threshold value switch 1/0 (S, x, 1, 0, y)
Outputs at y a logical "1" if x < S.

Threshold value switch 0/1 (S, x, 1, 0, y)
Outputs at y a logical "1" if x > S.

Threshold value 1/0 with hysteresis (S, H, x, 1, 0, y)
Outputs a logical "1" at y if x < S.
If x ≥ S + H then y returns to 0.

Threshold value 0/1 with hysteresis (S, H, x, 1, 0, y)
Outputs a logical "1" at y if x > S.
If x ≤ S - H then y returns to 0.

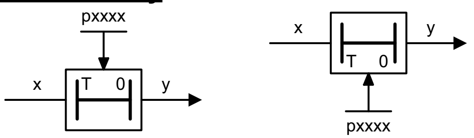
Limiter (LU, MLU, x, y, LL, MLL; or)
x is limited to the upper limit LU and the lower limit LL and output at y.
The digital signals MLU and MLL have the value "1", if the upper or lower limit is active.

Sample & Hold element (SET, x, S & H, y)
Sample and hold element.
y = x if SET = 1
(not retentively saved at POWER OFF)

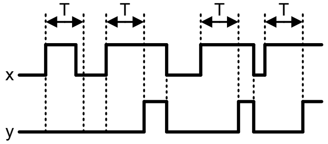
1	2	3	4	5	6	7	8

Explanations on the function diagrams	fp_1021_97_61.vsd	Function diagram	- 1021 -
Explanation of the symbols (part 2)	13.03.2018 V4.7_10	G120 CU230P-2	

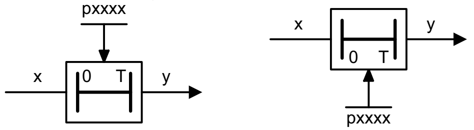
Switch-on delay



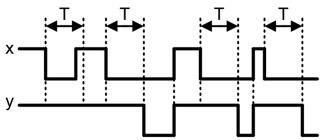
The digital signal x must have the value "1" without any interruption during the time T before output y changes to "1".



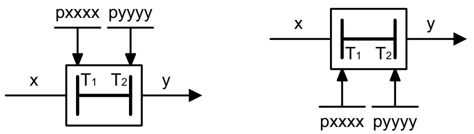
Switch-off delay



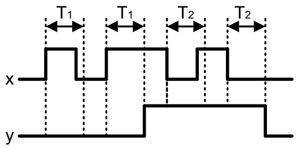
The digital signal x must have the value "0" without interruption during the time T before output y changes to "0".



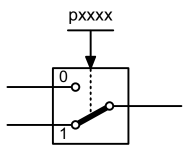
Delay (switch-on and switch-off)



The digital signal x must have the value "1" without interruption during time T1 or must have the value "0" during time T2 before output y changes its signal state.



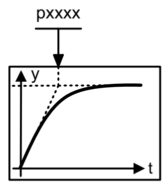
Switch symbol



Simple changeover switch

The switch position is shown according to the factory setting of pxxxx (in this case switch position 1).

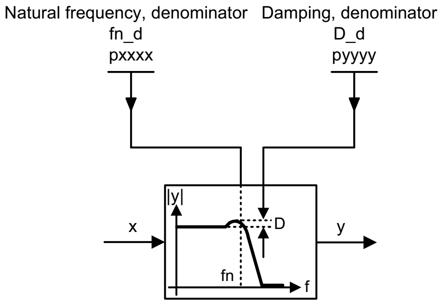
PT1 element



Delay element, first order.

pxxxx = time constant

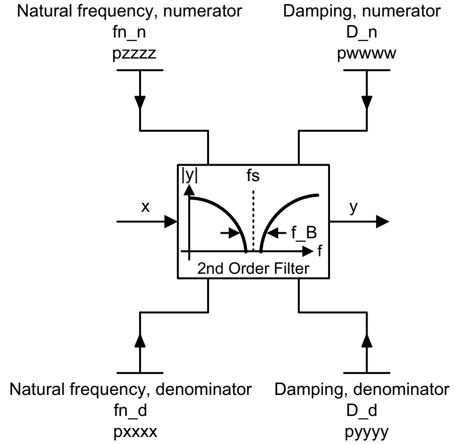
PT2 low pass



Transfer function

$$H(s) = \frac{1}{\left(\frac{s}{2\,\pi\,fn\_d}\right)^2 + \frac{2 \cdot D\_d}{2\,\pi\,fn\_d} \cdot s + 1}$$

2nd-order filter (bandstop/general filter)



Used as bandstop filter

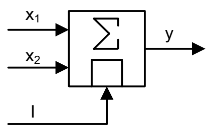
- center frequency fs: fn_n = fs
  fn_d = fs
- bandwidth f_B: D_n = 0

$$D\_d = \frac{f\_B}{2 \cdot fs}$$

Transfer function when used as general filter

$$H(s) = \frac{\left(\frac{s}{2\,\pi\,fn\_n}\right)^2 + \frac{2 \cdot D\_n}{2\,\pi\,fn\_n} \cdot s + 1}{\left(\frac{s}{2\,\pi\,fn\_d}\right)^2 + \frac{2 \cdot D\_d}{2\,\pi\,fn\_d} \cdot s + 1}$$

Analog adder can be activated



The following applies to I = 1 signal: y = x1 + x2

The following applies to I = 0 signal: y = x1

1	2	3	4	5	6	7	8
Explanations on the function diagrams					fp_1022_97_61.vsd	Function diagram	- 1022 -
Explanation of the symbols (part 3)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-3 1022 – Explanation of the symbols (part 3)

Fig. 3-4 1030 – Handling BICO technology

Handling BICO technology

Binector: r0723.15 — 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).

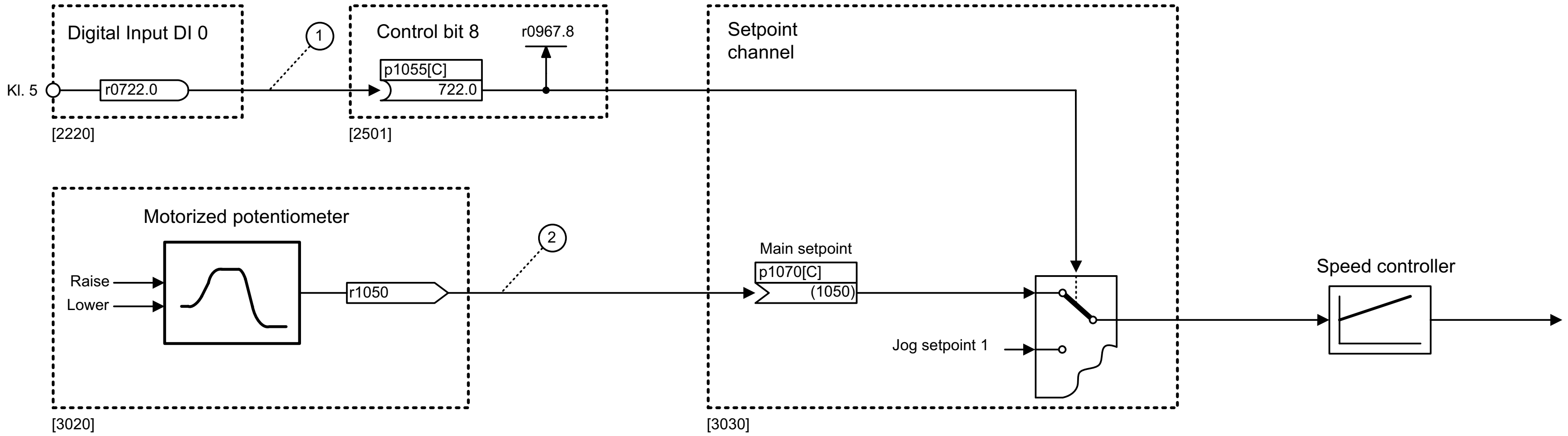
Connector: r0723 — Connectors are "analog signals" that can be freely interconnected (e.g. percentage variables, speeds or torques).
Connectors are also "CO:" display parameters (CO = Connector Output).

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 DI 0 (BO: r0722.0, Terminal 5 (Kl. 5)) on the CU230.



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	- 1030 -
Handling BICO technology					13.03.2018 V4.7_10	G120 CU230P-2	

3.3 Input/output terminals

Function diagrams

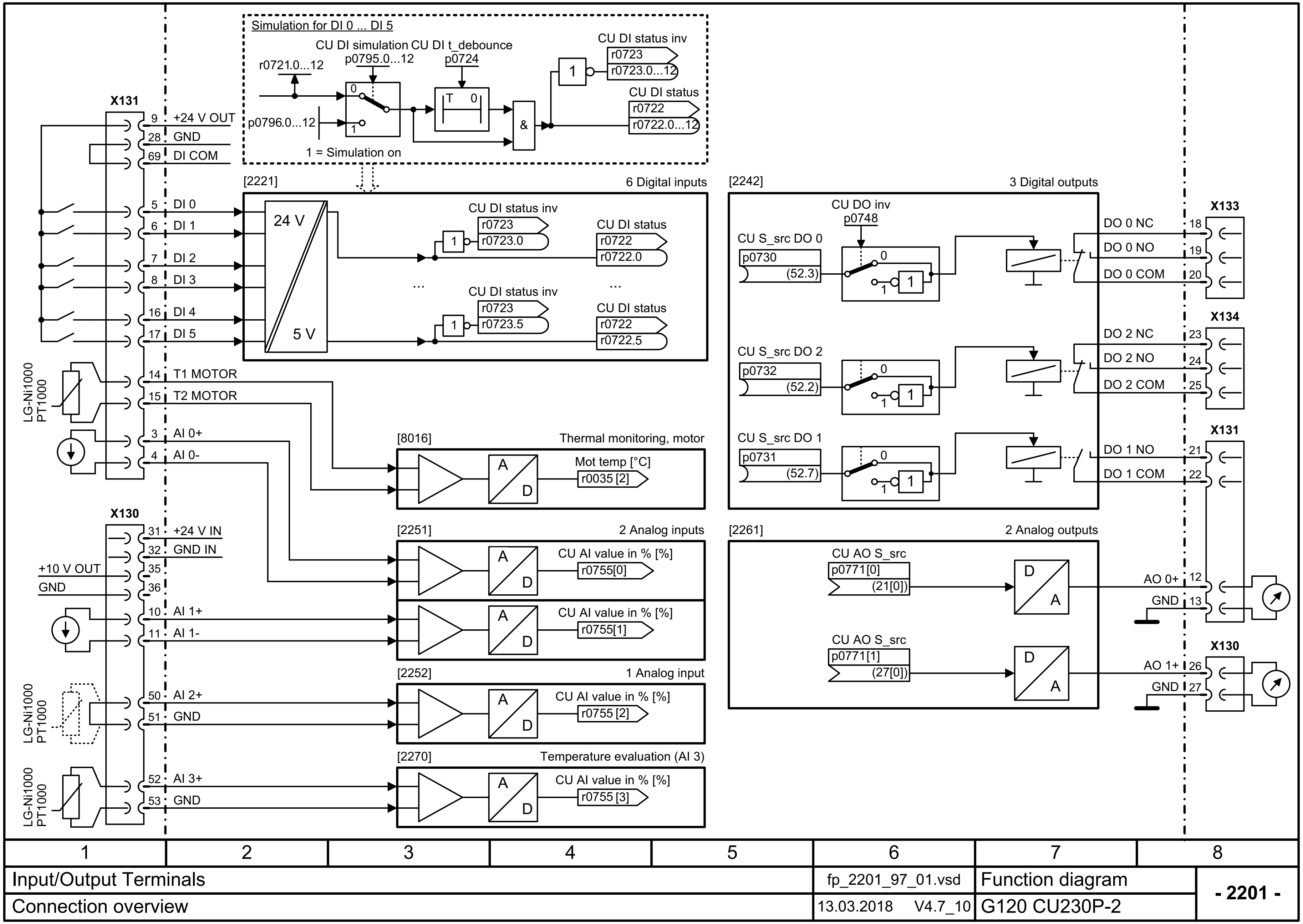
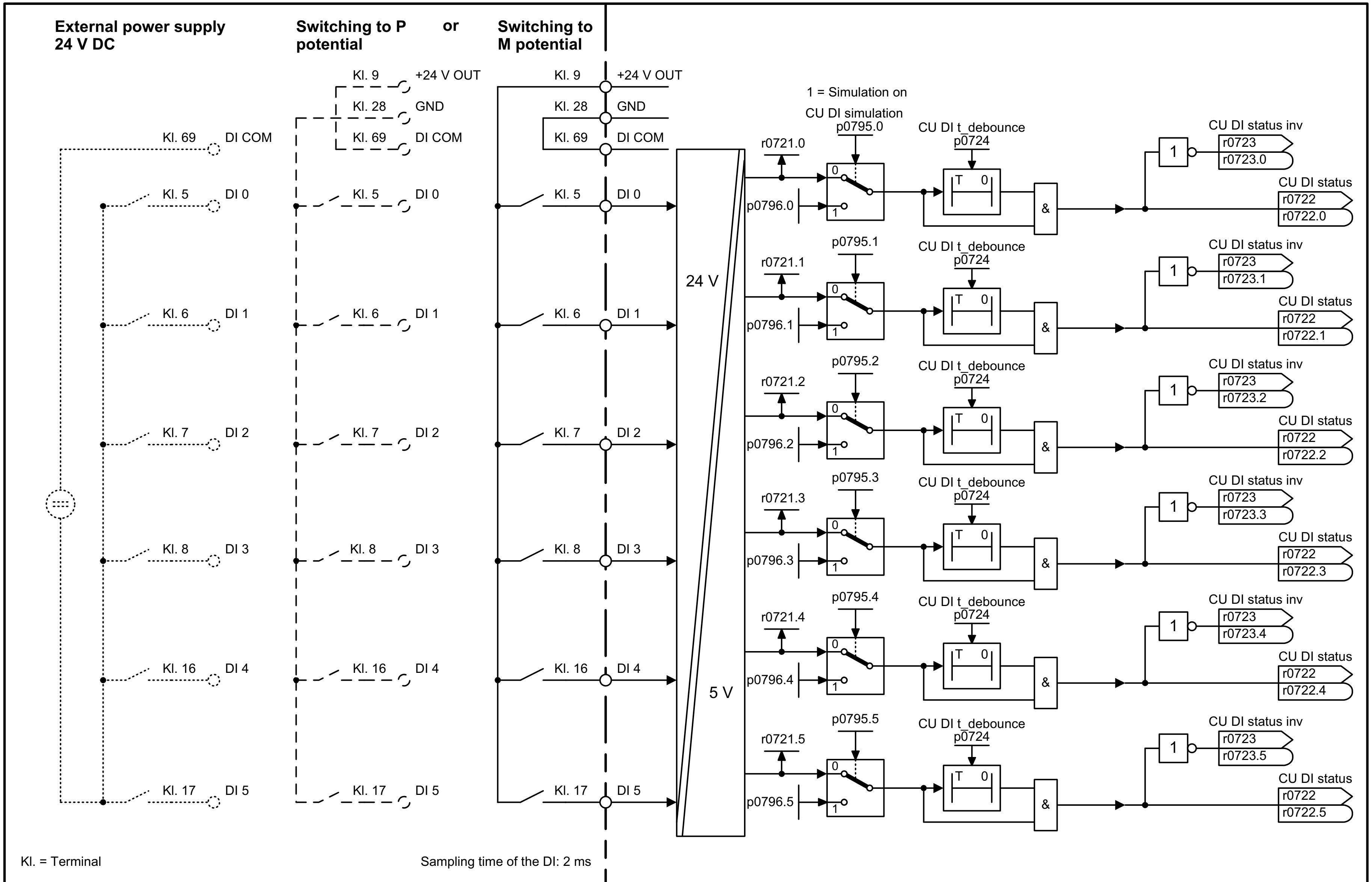


Fig. 3-5 2201 – Connection overview

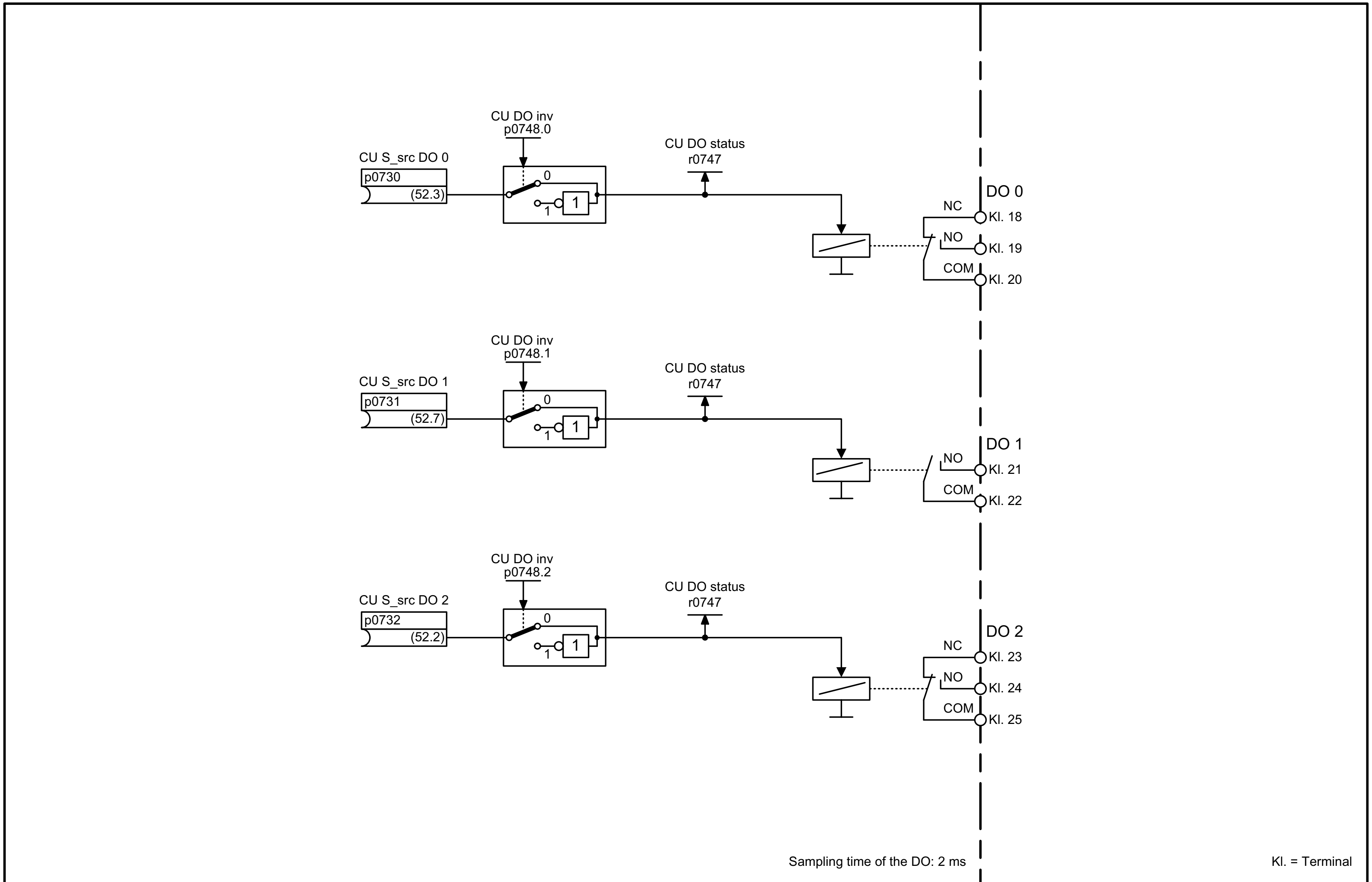


1	2	3	4	5	6	7	8

Input/Output Terminals	fp_2221_97_01.vsd	Function diagram	- 2221 -
Digital inputs, electrically isolated (DI 0 … DI 5)	13.03.2018 V4.7_10	G120 CU230P-2	

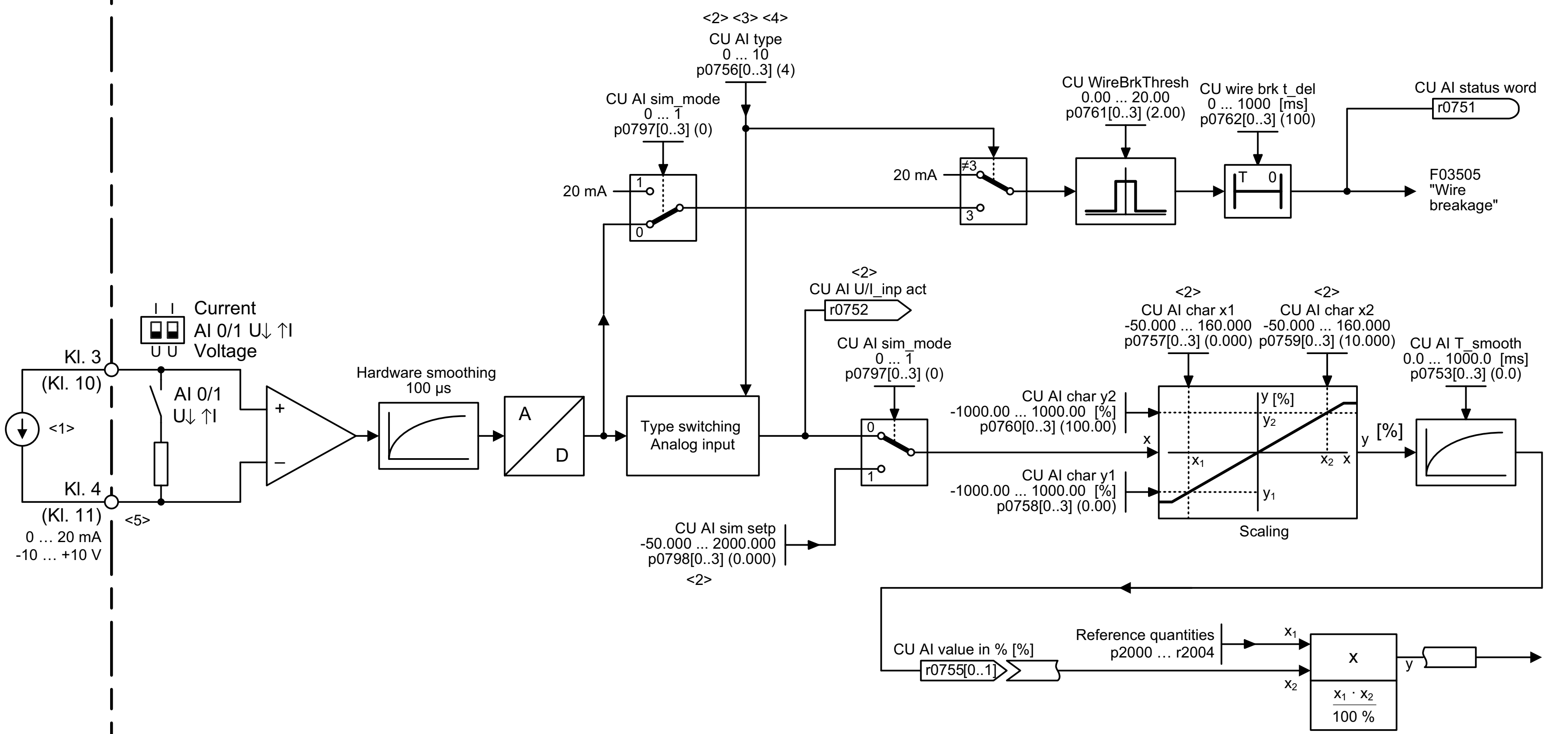
Fig. 3-6 2221 – Digital inputs, electrically isolated (DI 0 ... DI 5)

Fig. 3-7 2242 – Digital outputs (DO 0 … DO 2)



1	2	3	4	5	6	7	8

Input/Output Terminals	fp_2242_97_01.vsd	Function diagram	- 2242 -
Digital outputs (DO 0 … DO 2)	13.03.2018 V4.7_10	G120 CU230P-2	



Kl. = Terminal

<1> Differential Input!
For an input signal referred to ground, Kl. 4 (Kl. 11) must be connected to reference potential M.
Notice:
The voltage between inputs and between input and the ground point must not exceed 35 V.
When the load resistor is switched in (DIP switch in position ↑I), the voltage between the input terminals must not exceed 10 V or the impressed current 80 mA. If this is not observed, the input will be damaged.

<2> For p0756 = 2, 3 the units are mA.
For p0756 = 0, 1, 4 the units are V.

Sampling time of the AI: 4 ms

<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)

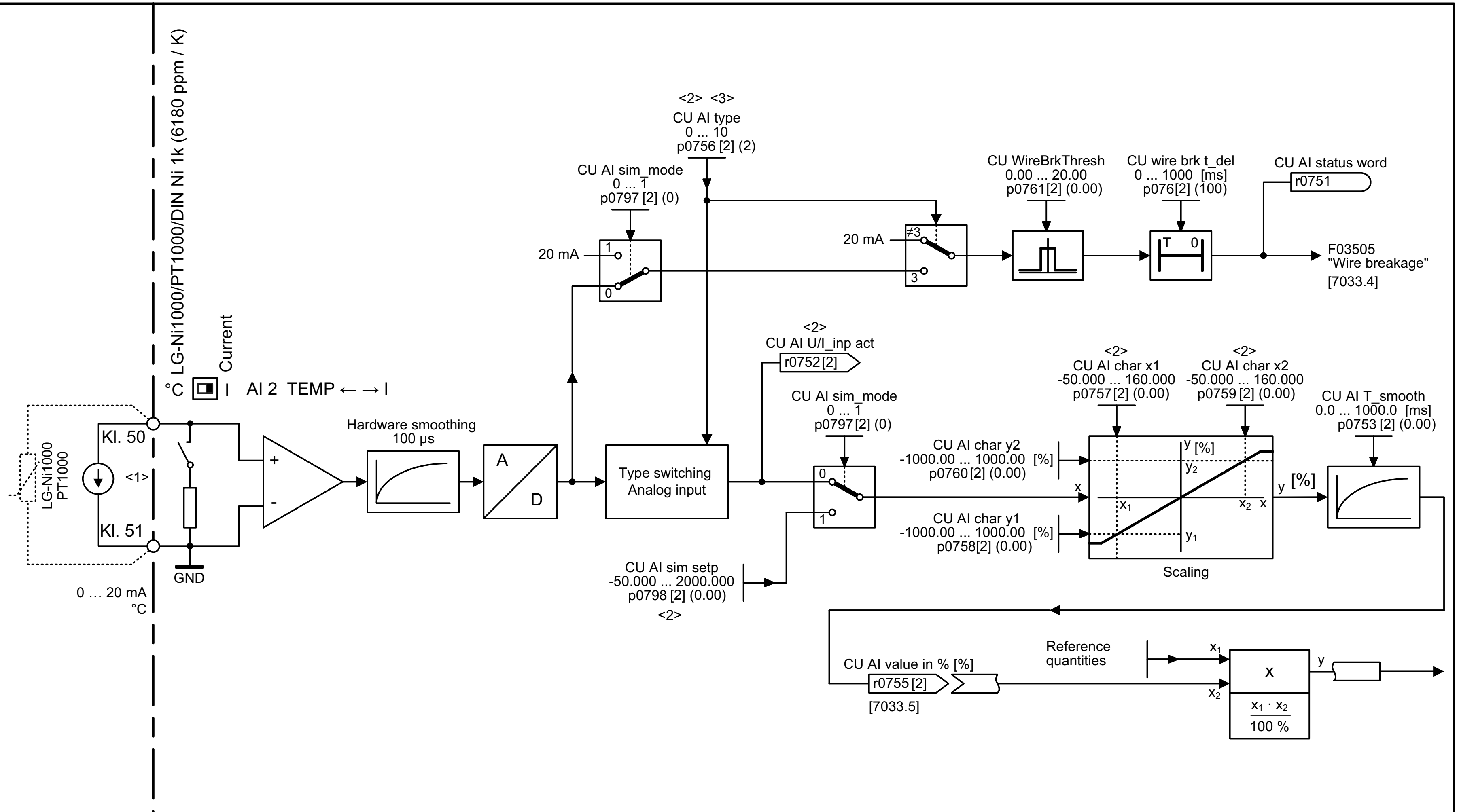
<4> Wire breakage sensing only activated when p0756 = 1, 3.

<5> Values in brackets --> AI 1

1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2251_97_52.vsd	Function diagram	- 2251 -
Analog inputs 0 ... 1 (AI 0 ... AI 1)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-8 2251 – Analog inputs 0 ... 1 (AI 0 ... AI 1)

Fig. 3-9 2252 – Analog input 2 (AI 2)



<1> Notice:
The voltage between inputs and between input and the ground point must not exceed 35 V.
When the load resistor is switched in (DIP switch in position →I), the voltage between the input terminals must not exceed 10 V or the impressed current 80 mA. If this is not observed the input will be damaged.

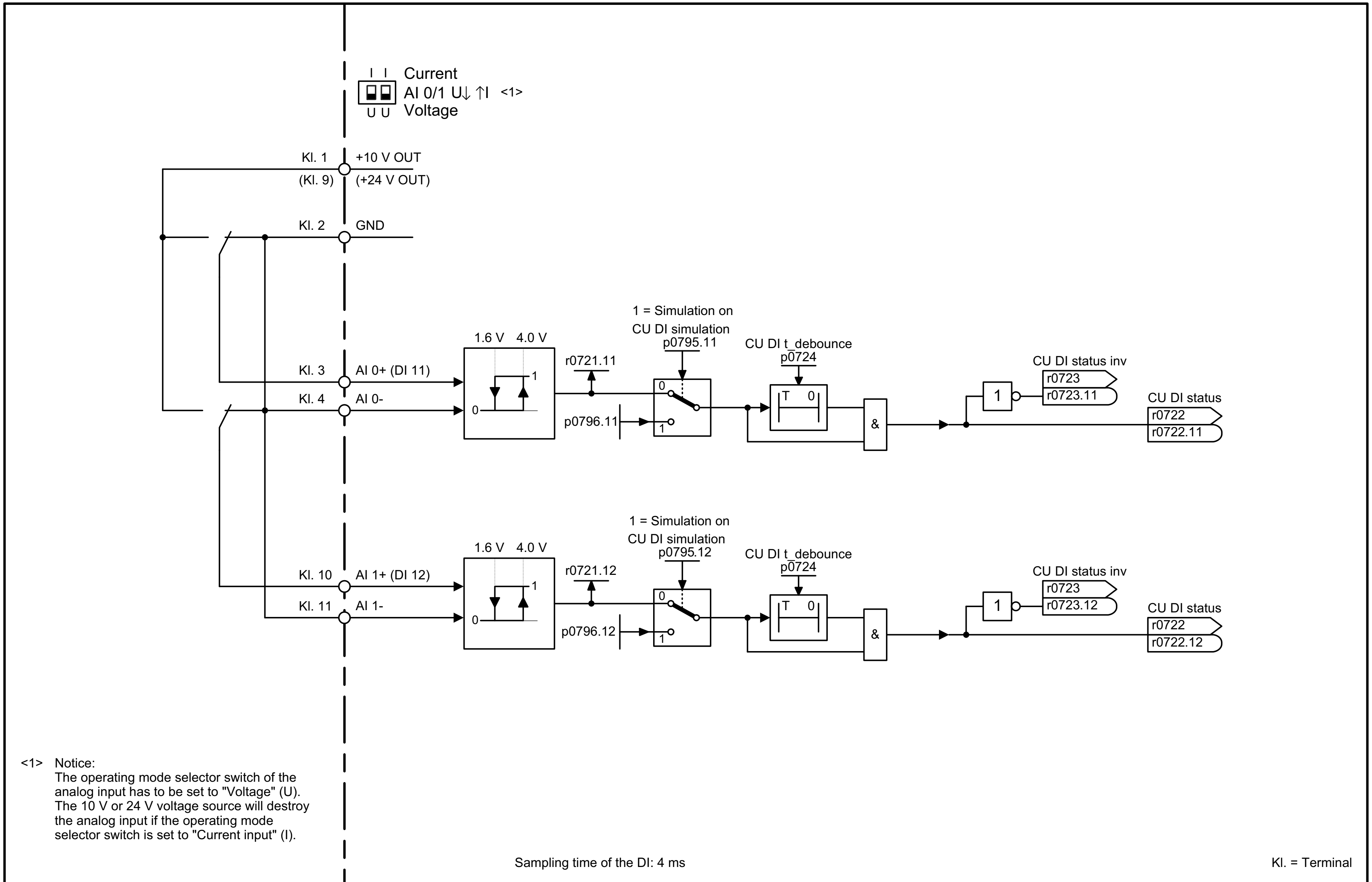
<2> For p0756 = 2, 3 the units are mA.
For p0756 = 6, 7, 10 the units are °C.

<3> Wire breakage sensing only activated when p0756 = 3.

Sampling time of the AI: 4 ms

Kl. = Terminal

1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2252_97_01.vsd	Function diagram	- 2252 -
Analog input 2 (AI 2)					13.03.2018 V4.7_10	G120 CU230P-2	

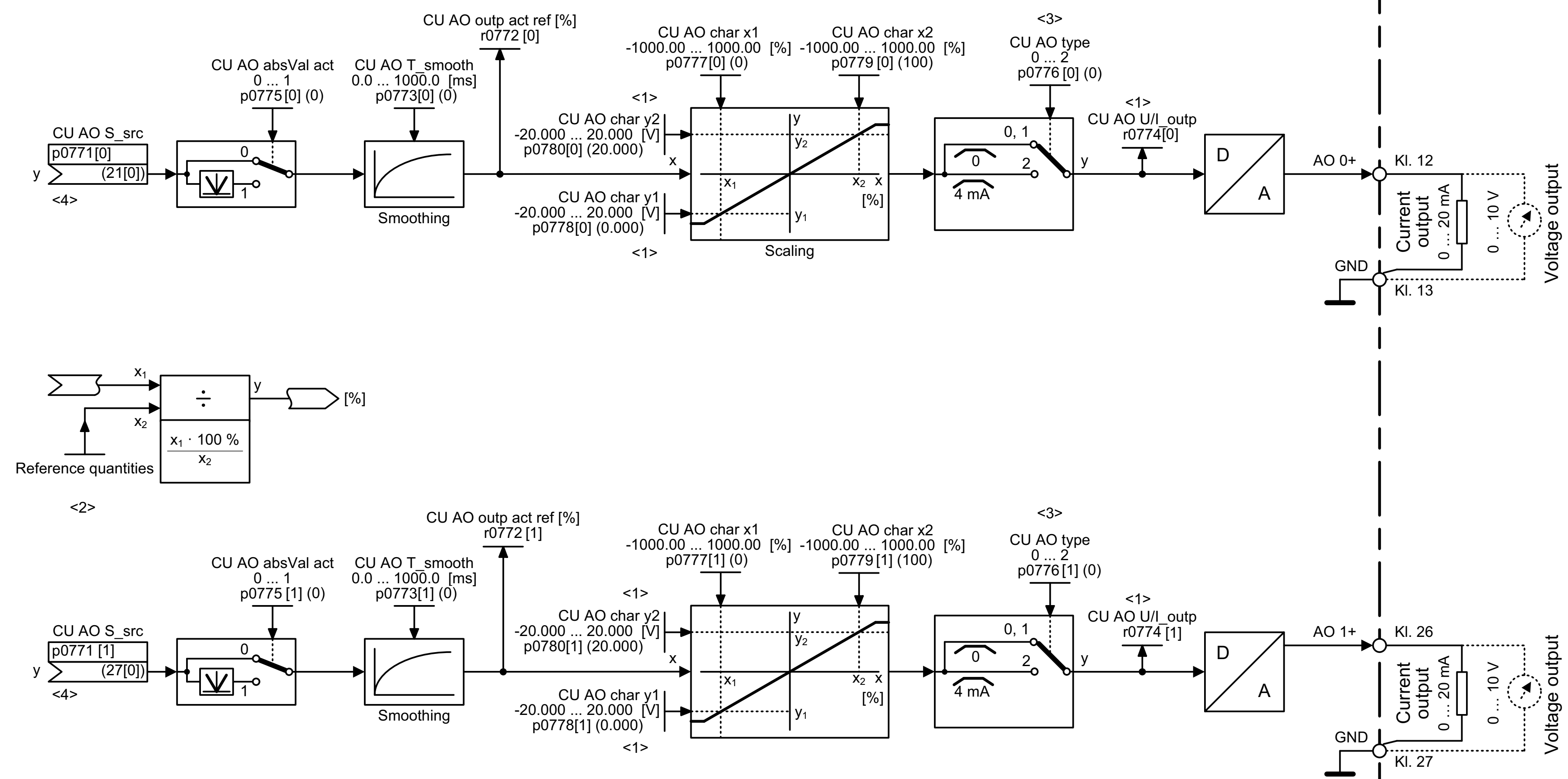


1	2	3	4	5	6	7	8

Input/Output Terminals	fp_2256_97_52.vsd	Function diagram	- 2256 -
Analog inputs as Digital inputs (DI 11 … DI 12)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-10 2256 – Analog inputs as digital inputs (DI 11 ... DI 12)

Fig. 3-11 2261 – Analog outputs 0 … 1 (AO 0 … AO 1)

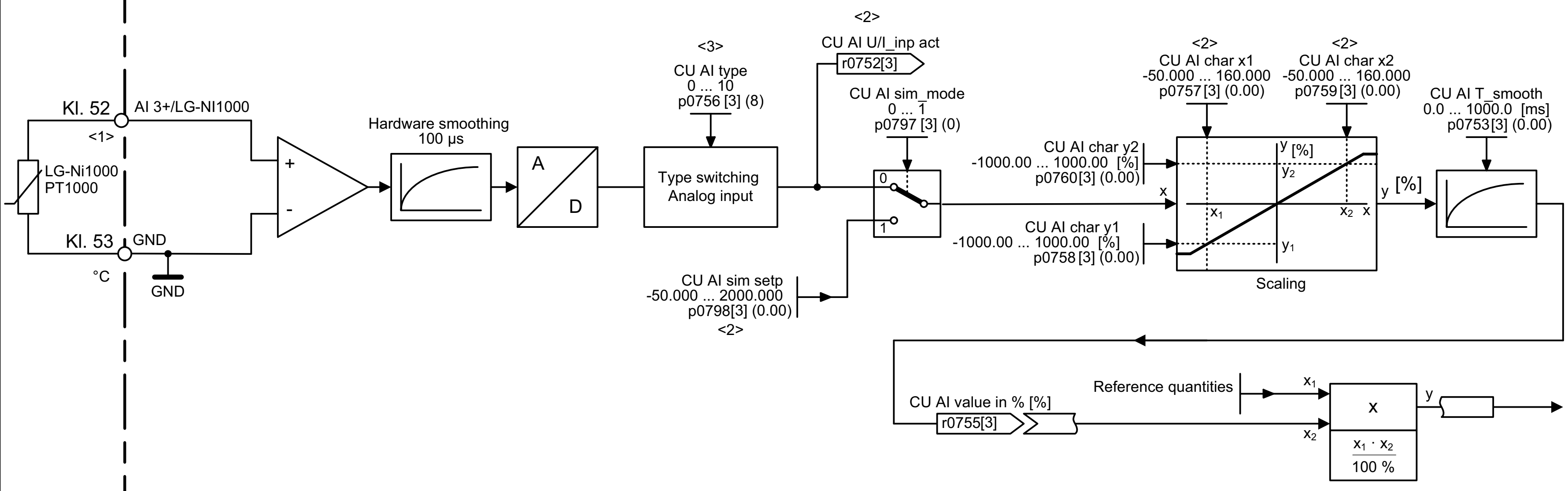


<1> For p0776 = 0, 2 the units are mA.
For p0776 = 1 the units are V.
<2> The input signals are referred to the reference quantities p2000 ... r2004 (100 % = p200x).
<3> Possible settings p0776[0] and p0776[1]:
= 0: 0 mA ... +20 mA
= 1: 0 V ... +10 V
= 2: 4 mA ... +20 mA
<4> For p2030 = 2, 5 – the analog outputs are controlled via fieldbus:
p0771[0] = 791[0]
p0771[1] = 791[1

Sampling time of the AO: 4 ms

Kl. = Terminal

1	2	3	4	5	6	7	8
Input/Output Terminals					fp_2261_97_01.vsd	Function diagram	- 2261 -
Analog outputs 0 … 1 (AO 0 … AO 1)					13.03.2018 V4.7_10	G120 CU230P-2	



<1> Notice:
The voltage between input and the ground point must not exceed 35 V. If this is not observed the input will be damaged.

<2> For p0756 = 6, 7, 10 the units are °C.

<3> Possible settings p0756[3]:
= 6: LG-Ni1000
= 7: PT1000
= 8: No sensor
= 10: DIN Ni 1k (6180 ppm/K)

Kl. = Terminal

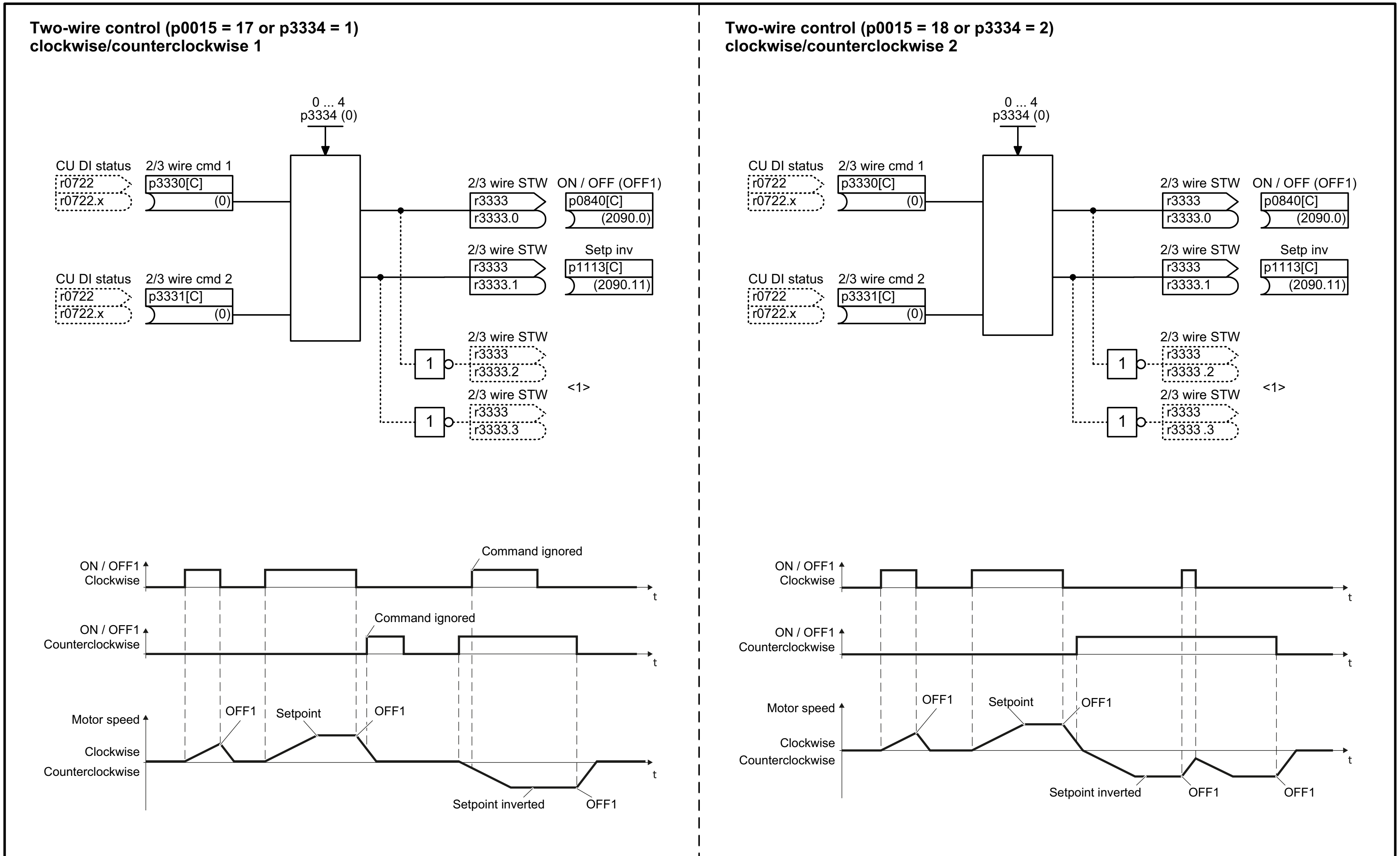
Sampling time of the AI: 4 ms

1	2	3	4	5	6	7	8

Input/Output Terminals	fp_2270_97_01.vsd	Function diagram	- 2270 -
Temperature evaluation LG-Ni1000/PT1000 (AI 3)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-12 2270 – Temperature evaluation LG-Ni1000/PT1000 (AI 3)

Fig. 3-13 2272 – Two wire control

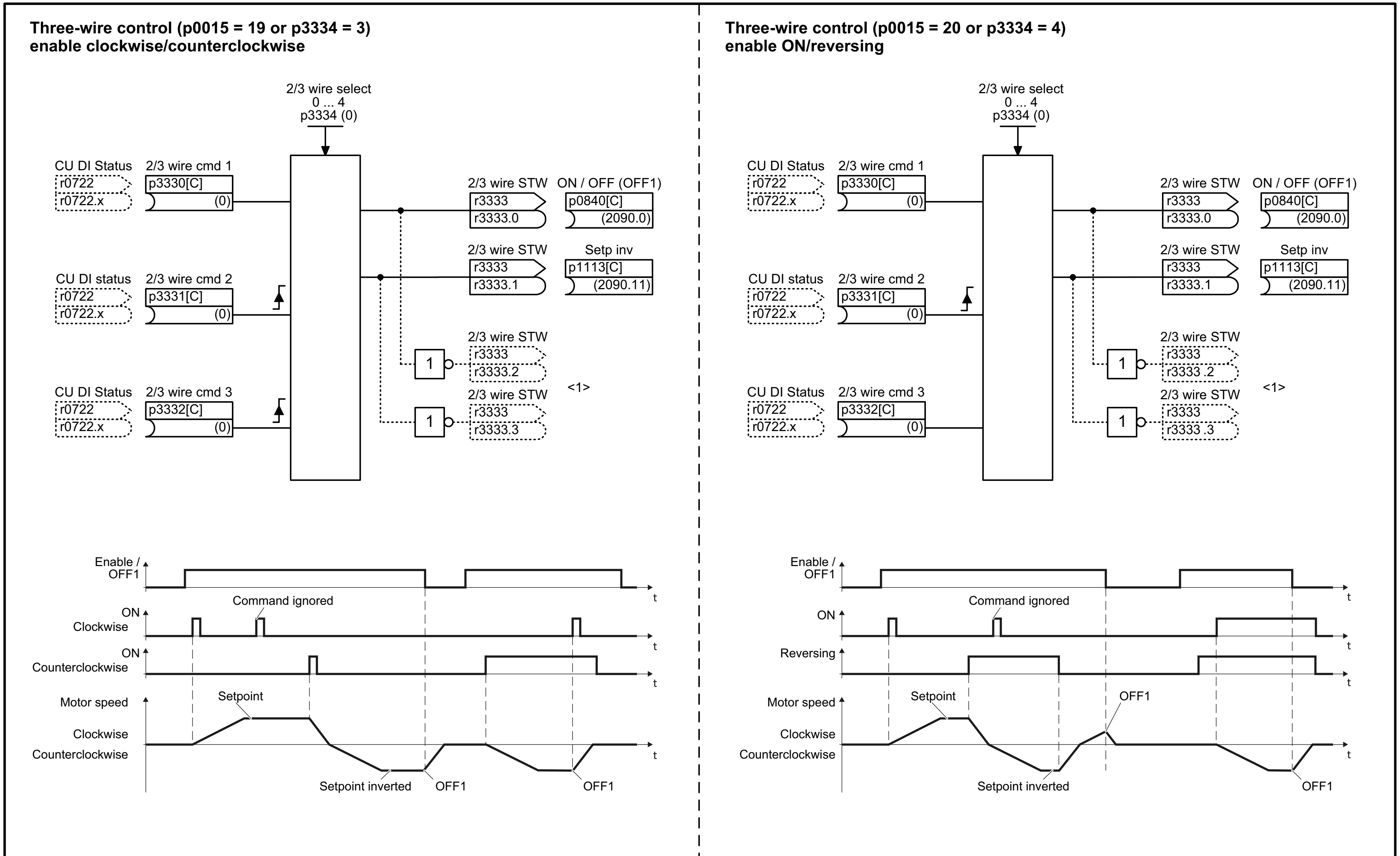


<1> Ongoing interconnection is either possible from r3333.0/r3333.1 or from the inverted signals r3333.2/r3333.3.

1	2	3	4	5	6	7	8

Input/Output Terminals	fp_2272_97_62.vsd	Function diagram	- 2272 -
Two-wire control	13.03.2018 V4.7_10	G120 CU230P-2	

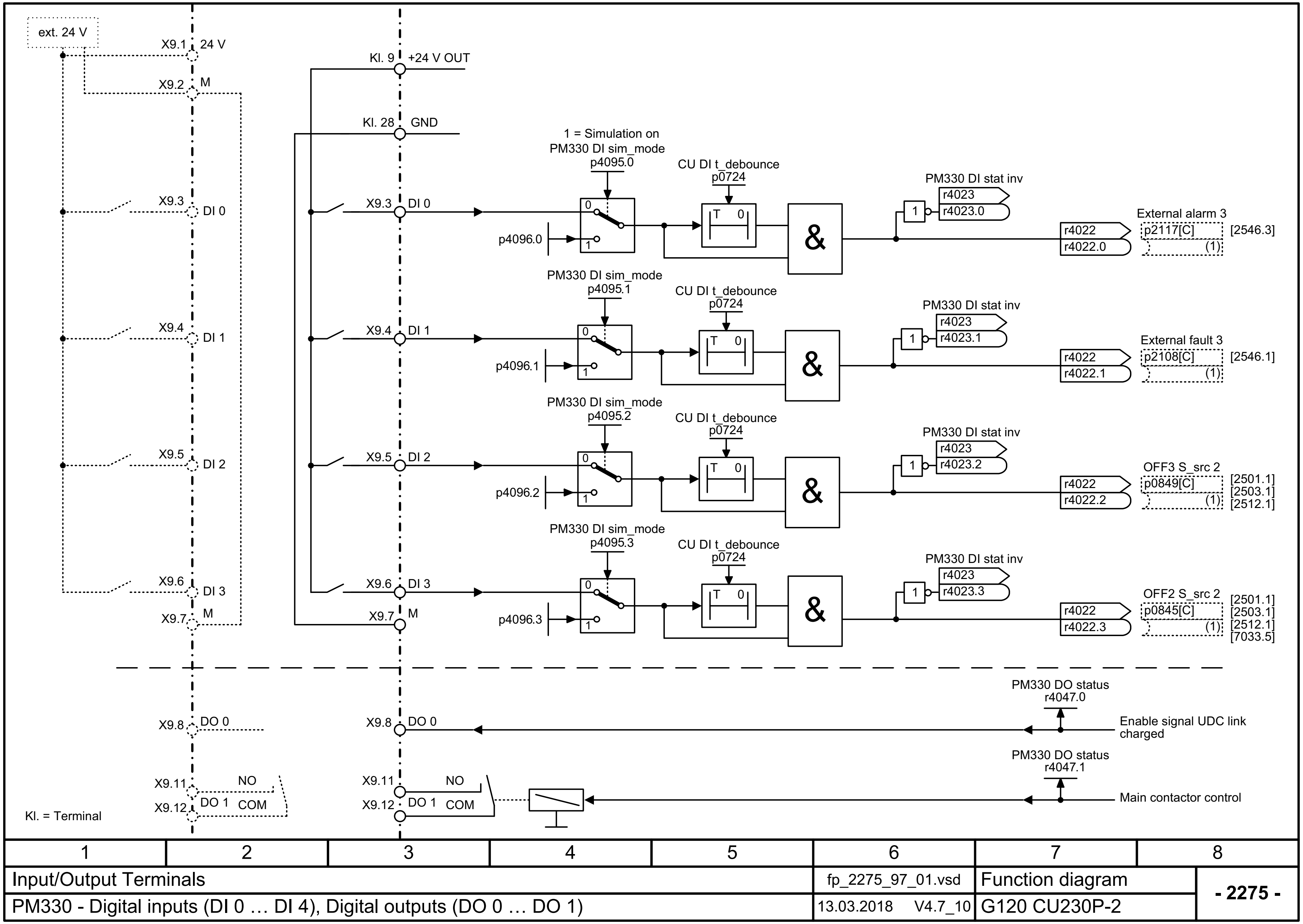
Fig. 3-14 2273 – Three-wire control



<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	- 2273 -
Three-wire control					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-15 2275 – PM330 - digital inputs (DI 0 … DI 4), digital outputs (DO 0 … DO 1)



3.4 PROFIenergy

Function diagrams

Fig. 3-16 2381 – Control commands and interrogation commands

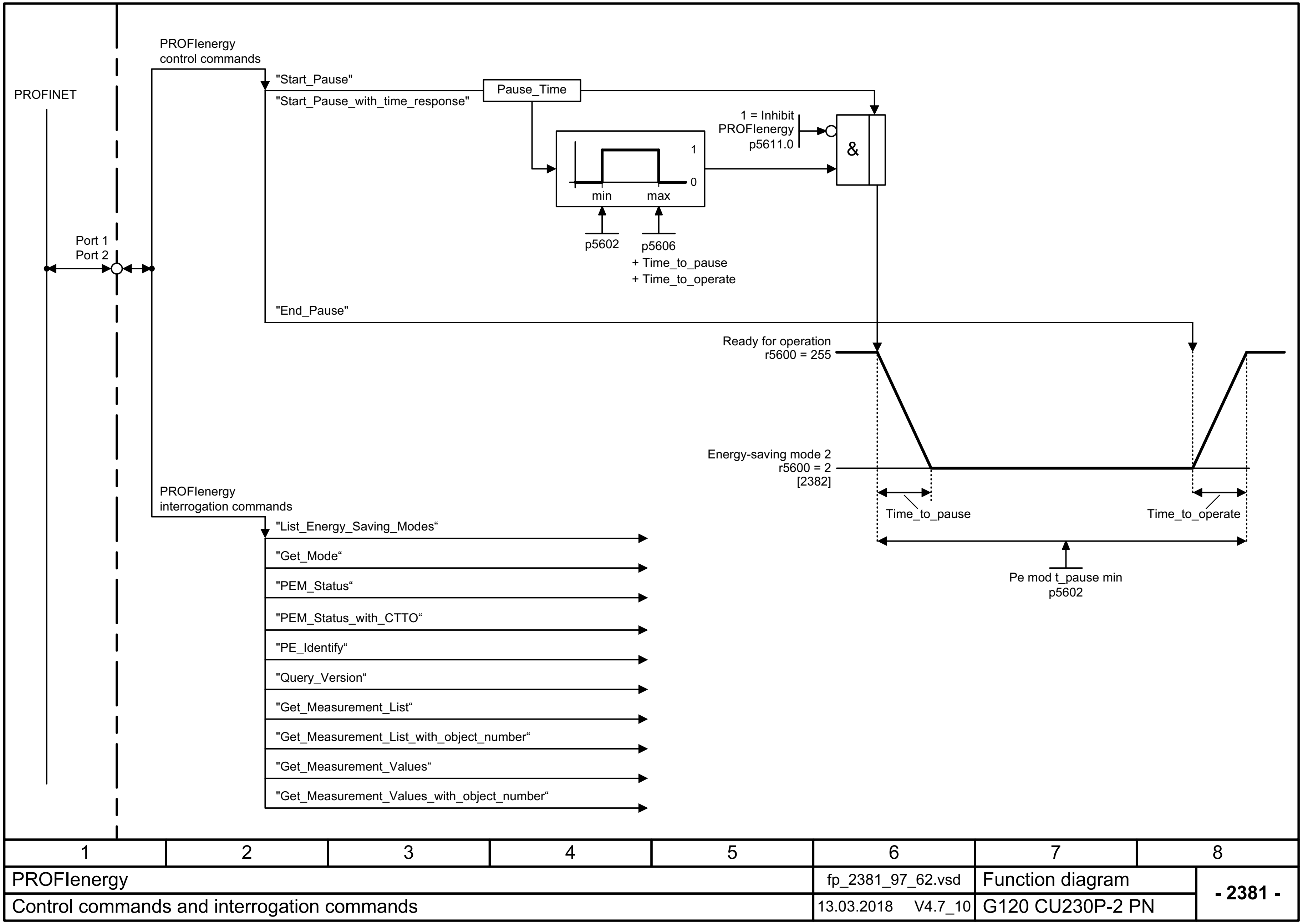
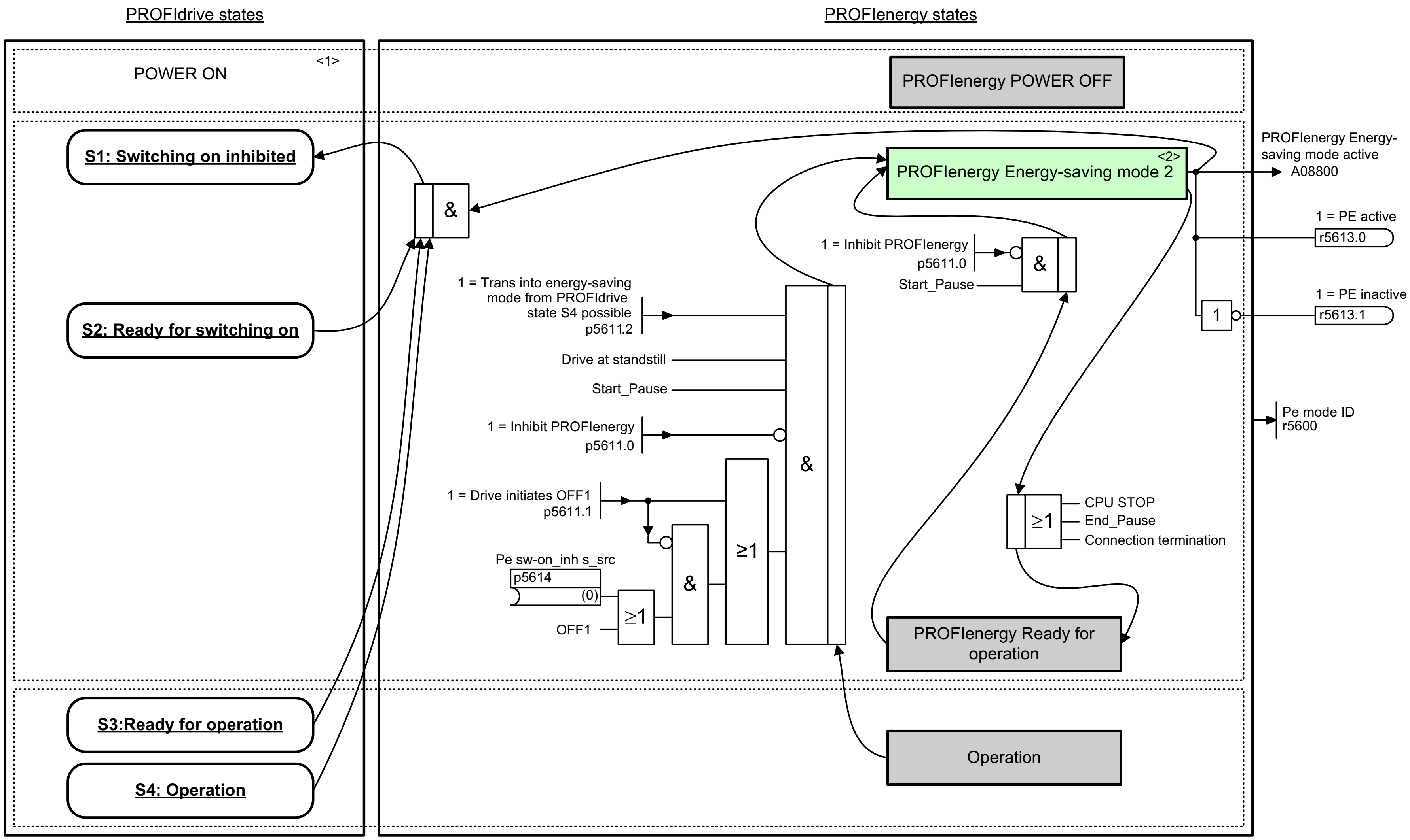


Fig. 3-17 2382 – States



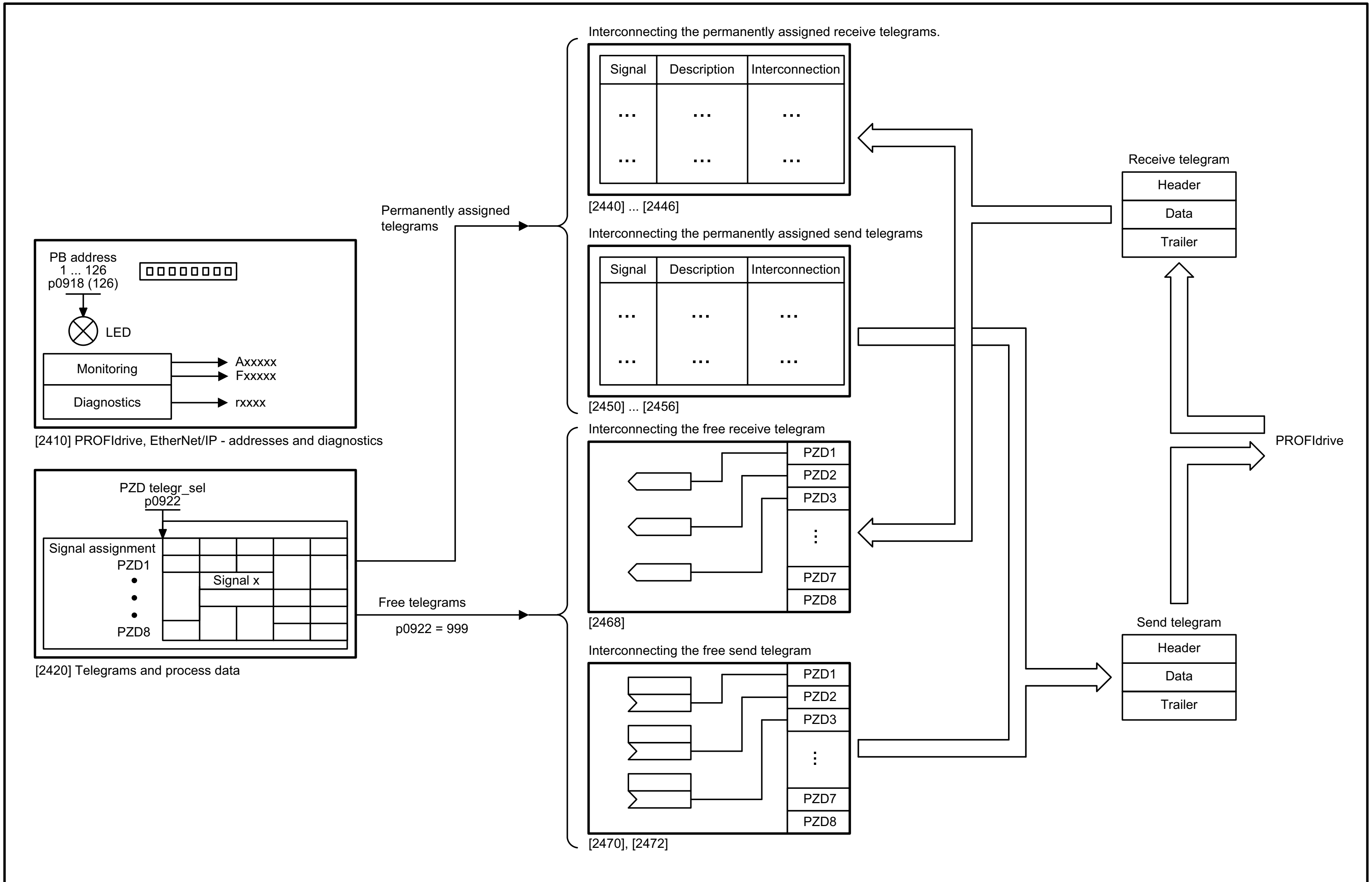
<1> Excerpt from: Basic state machine of a PROFIdrive drive axis (source: PROFIBUS Nutzerorganisation (PNO)).
<2> Diagnostic alarms to the CPU inhibited.

1	2	3	4	5	6	7	8
PROFIenergy					fp_2382_97_61.vsd	Function diagram	- 2382 -
States					13.03.2018 V4.7_10	G120 CU230P-2 PN	

3.5 Communication PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP

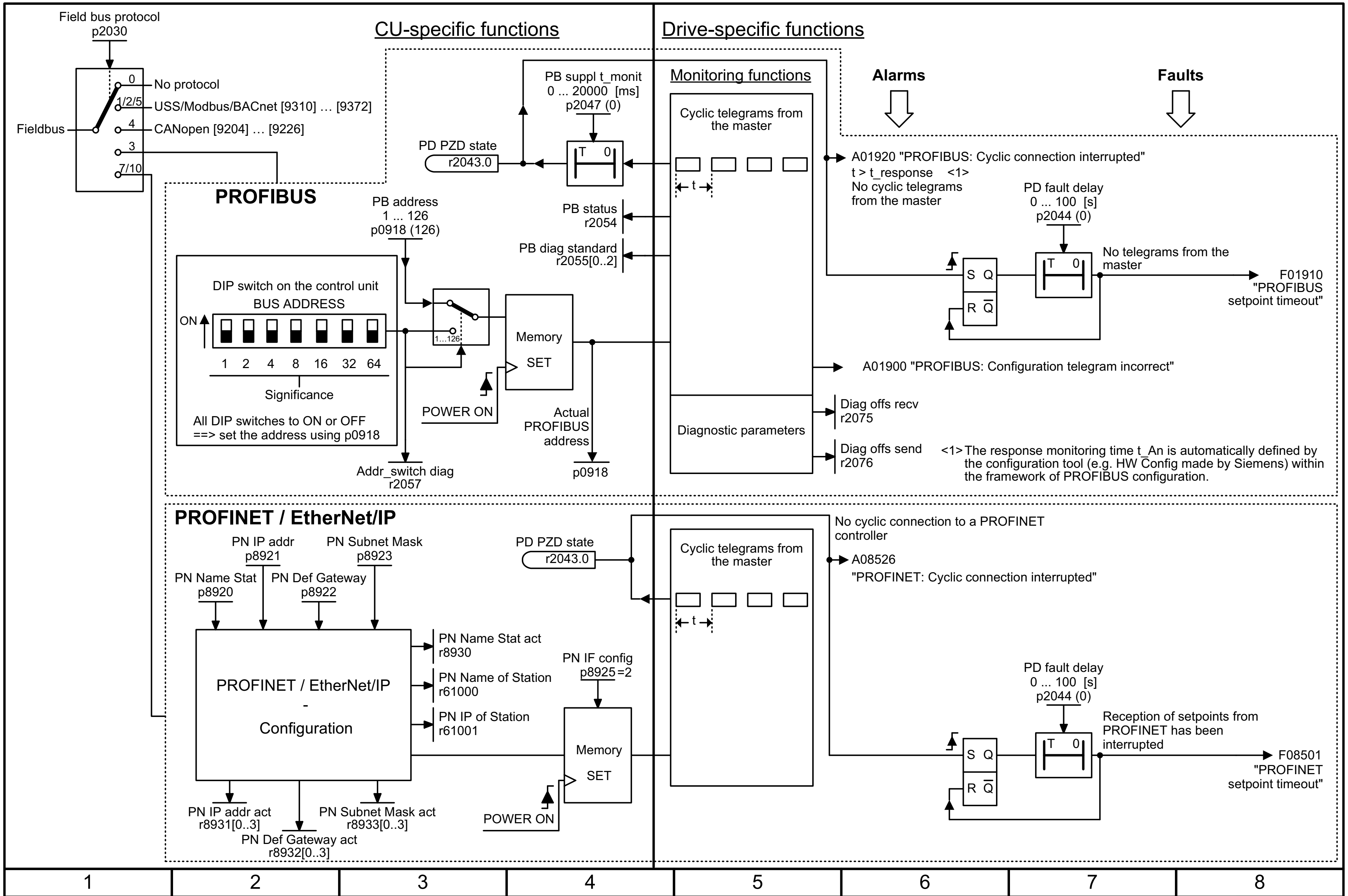
Function diagrams

Fig. 3-18 2401 – Overview



1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP					fp_2401_97_61.vsd	Function diagram	- 2401 -
Overview					13.03.2018 V4.7_10	CU230P-2 DP/PN	

Fig. 3-19 2410 – PROFIdrive, EtherNet/IP - addresses and diagnostics



PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP	fp_2410_97_01.vsd	Function diagram	- 2410 -
PROFIdrive, EtherNet/IP - addresses and diagnostics	13.03.2018 V4.7_10	CU230P-2 DP/PN	

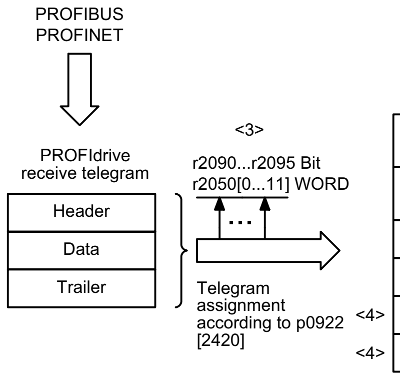
<1>
PZD telegr_sel
1 ... 999
p0922 (1)

	Standard telegrams				Manufacturer-specific telegrams								Free telegram	
Interconnection is made according to	[2440], [2450] automatically													
Telegram	1		20		350		352		353		354		999	
PZD1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1	ZSW1	STW1 <4>	ZSW1 <4>
PZD2	NSOLL_A	NIST_A	NSOLL_A	NIST_A_GL	NSOLL_A	NIST_A_GL	NSOLL_A	NIST_A_GL	NSOLL_A	NIST_A_GL	NSOLL_A	NIST_A_GL	Receive telegram length freely selectable via central PROFIdrive configuration in the master.	Transmit telegram length freely selectable via central PROFIdrive configuration in the master.
PZD3	Receive telegram from PROFIBUS/PROFINET	Send telegram to PROFIBUS/PROFINET		IAIST_GL	M_LIM	IAIST_GL	<3>	IAIST_GL			<3>	IAIST_GL		
PZD4				MIST_GL	STW3	ZSW3	<3>	MIST_GL			<3>	MIST_GL		
PZD5				PIST_GL			<3>	WARN_CODE			<3>	WARN_CODE		
PZD6				<2>			<3>	FAULT_CODE			<3>	FAULT_CODE		
PZD7														
PZD8														
PZD9														
PZD10														
PZD11														
PZD12														

<1> If p0922 = 999 is changed to another value, the telegram is automatically assigned.
If p0922 unequal 999 is changed to p0922 = 999, the "old" telegram assignment is maintained.
<2> Freely interconnectable (pre-setting: MELD_NAMUR).
<3> Can be freely connected.
<4> In order to comply with the PROFIdrive profile, PZD1 must be used as control word 1 (STW1) or status word 1 (ZSW1).
p2037 = 2 should be set if STW1 is not transferred with PZD1 as specified in the PROFIdrive profile.

1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP					fp_2420_97_67.vsd	Function diagram	- 2420 -
PROFIdrive - Telegrams and process data (PZD)					13.03.2018 V4.7_10	CU230P-2 DP/PN	

Fig. 3-20 2420 – PROFIdrive - telegrams and process data (PZD)



Signal targets for PZD receive signals

Signal	Meaning	PROFIdrive Signal No.	<1> Interconnection parameter	Function diagram	<2> Data type	Scaling
STW1	Control word 1	1	(bit serial)	[2442]	U16	-
NSOLL_A	Speed setpoint A (16-bit)	5	p1070	[3030.2]	I16	4000 hex ≙ p2000
<4> M_LIM	Torque limit	310	p1552, p1554	[6060.1]	U16	4000 hex ≙ 100 %
<4> STW3	Control word 3	304	(bit serial)	[2446]	U16	-

<1> When selecting a standard telegram or a manufacturer-specific telegram via p0922, these interconnection parameters of the command data set CDS are automatically set to 0.
<2> Data type according to to the PROFIdrive profile: I16 = Integer16, U16 = Unsigned16.
<3> Display parameters for receive data according to [2468].
<4> Only SIEMENS telegram 350.

1	2	3	4	5	6	7	8

PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP	fp_2440_97_64.vsd	Function diagram	- 2440 -
PROFIdrive - PZD receive signals interconnection	13.03.2018 V4.7_10	CU230P-2 DP/PN	

Fig. 3-21 2440 – PROFIdrive - PZD receive signals interconnection

Signal targets for STW1 in Interface Mode VIK-NAMUR (p2038 = 2)

<1>

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]	[3070], [3080]	-
STW1.5	1 = Continue ramp-function generator 0 = Freezes the ramp-function generator	p1141[0] = r2090.5	[2501.3]	[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]	[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 <2>	p0854[0] = r2090.10	[2501.3]	[2501]	-
STW1.11	1 = Dir of rot reversal <4>	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 <3>	-	[8560]	-

<1> Used in telegram 20.
<2> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.
<3> Interconnection is not disabled.
<4> The direction reversal can be locked (see p1110 and p1111).

1	2	3	4	5	6	7	8

PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP	fp_2441_97_61.vsd	Function diagram	- 2441 -
PROFIdrive - STW1 control word interconnection (p2038 = 2)	13.03.2018 V4.7_10	CU230P-2 DP/PN	

Fig. 3-22 2441 – PROFIdrive - STW1 control word interconnection (p2038 = 2)

Fig. 3-23 2442 – PROFIdrive - STW1 control word interconnection (p2038 = 0)

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	= 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]	[3070], [3080]	-
STW1.5	1 = Continue ramp-function generator 0 = Freezes the ramp-function generator	p1141[0] = r2090.5	[2501.3]	[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]	[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 <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), EtherNet/IP	fp_2442_97_61.vsd	Function diagram	- 2442 -
PROFIdrive - STW1 control word interconnection (p2038 = 0)	13.03.2018 V4.7_10	CU230P-2 DP/PN	

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	Reserved	-	-	-	-
STW3.12	Reserved	-	-	-	-
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.

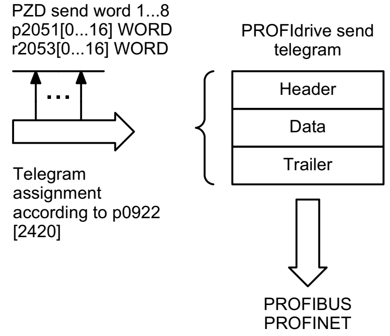
1	2	3	4	5	6	7	8

PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP	fp_2446_97_51.vsd	Function diagram	- 2446 -
PROFIdrive - STW3 control word interconnection	13.03.2018 V4.7_10	CU230P-2 DP/PN	

Fig. 3-24 2446 – PROFIdrive - STW3 control word interconnection

Fig. 3-25 2450 – PROFIdrive - PZD send signals 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 ≙ p2000
IAIST_GLATT	Absolute actual current, smoothed	51	r0068[1]	[6799]	I16	4000 hex ≙ p2002
MIST_GLATT	Actual torque smoothed	53	r0080[1]	[6799]	I16	4000 hex ≙ p2003
PIST_GLATT	Power factor, smoothed	54	r0082[1]	[6799]	I16	4000 hex ≙ p2004
NIST_A_GLATT	Actual speed, smoothed	57	r0063[1]	-	I16	4000 hex ≙ 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), EtherNet/IP	fp_2450_97_64.vsd	Function diagram	- 2450 -
PROFIdrive - PZD send signals interconnection	13.03.2018 V4.7_10	CU230P-2 DP/PN	

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].0 … p2088[0].15).
<2> Interconnection is not disabled.

1	2	3	4	5	6	7	8
PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP					fp_2451_97_61.vsd	Function diagram	- 2451 -
PROFIdrive - ZSW1 status word interconnection (p2038 = 2)					13.03.2018 V4.7_10	CU230P-2 DP/PN	

Fig. 3-26 2451 – PROFIdrive - 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	Reserved	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]	[8021]	✔

<1> The ZSW1 is generated using the binector-connector converter (BI: p2080[0..15], inversion: p2088[0].0 … p2088[0].15).
<2> The drive is ready to accept data.

1	2	3	4	5	6	7	8

PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP	fp_2452_97_61.vsd	Function diagram	- 2452 -
PROFIdrive - ZSW1 status word interconnection (p2038 = 0)	13.03.2018 V4.7_10	CU230P-2 DP/PN	

Fig. 3-27 2452 – PROFIdrive - ZSW1 status word interconnection (p2038 = 0)

Signal sources for ZSW3 im Interface Mode SINAMICS

<1>

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 = I_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		-	-	-

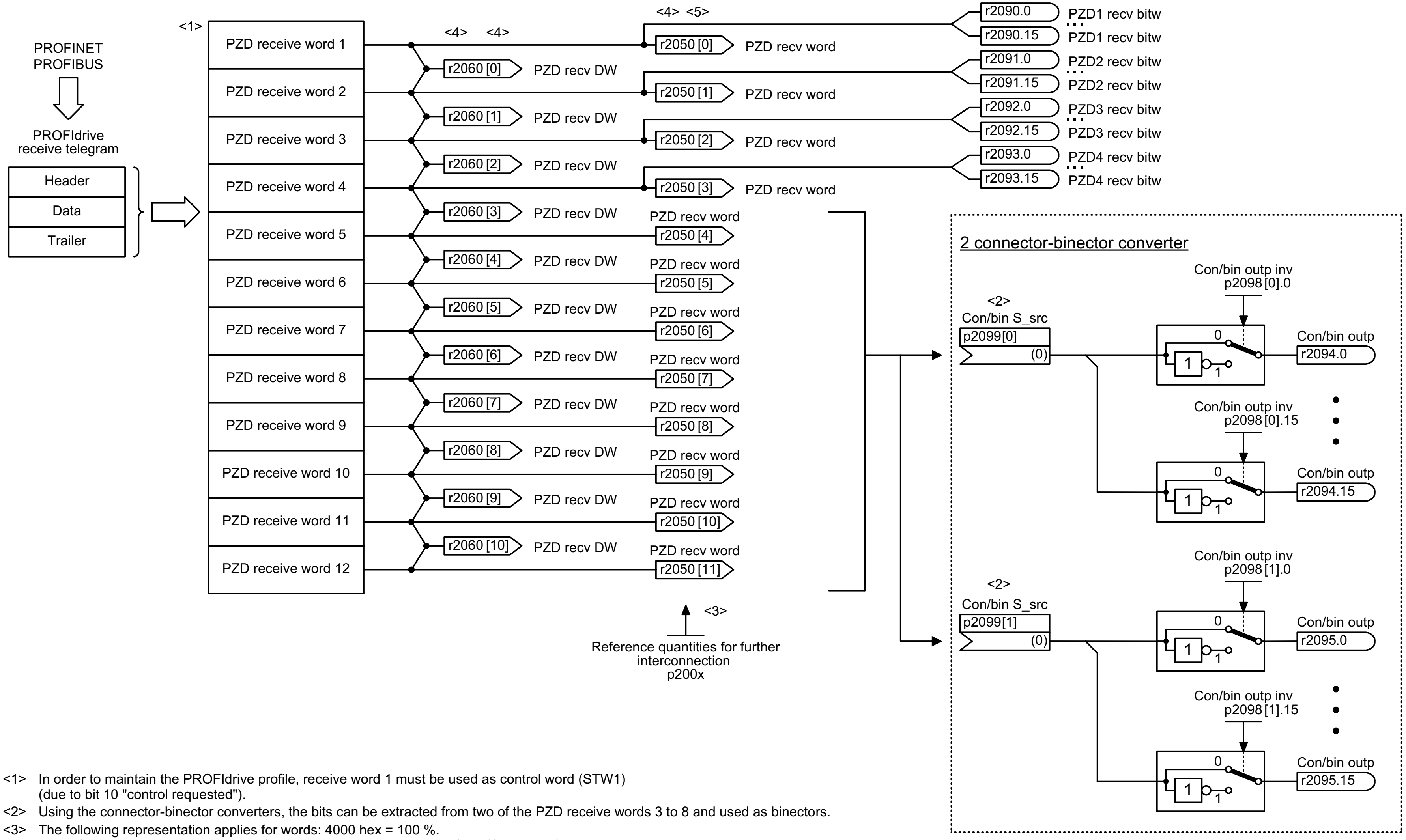
<1> Used in telegram 350.

1	2	3	4	5	6	7	8

PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP	fp_2456_97_61.vsd	Function diagram	- 2456 -
PROFIdrive - ZSW3 status word interconnection	13.03.2018 V4.7_10	CU230P-2 DP/PN	

Fig. 3-28 2456 – PROFIdrive - ZSW3 status word interconnection

Fig. 3-29 2468 – PROFIdrive - receive telegram, free interconnection via BICO (p0922 = 999)



<1> In order to maintain the PROFIdrive profile, receive word 1 must be used as control word (STW1) (due to bit 10 "control requested").

<2> Using the connector-binector converters, the bits can be extracted from two of the PZD receive words 3 to 8 and used as binectors.

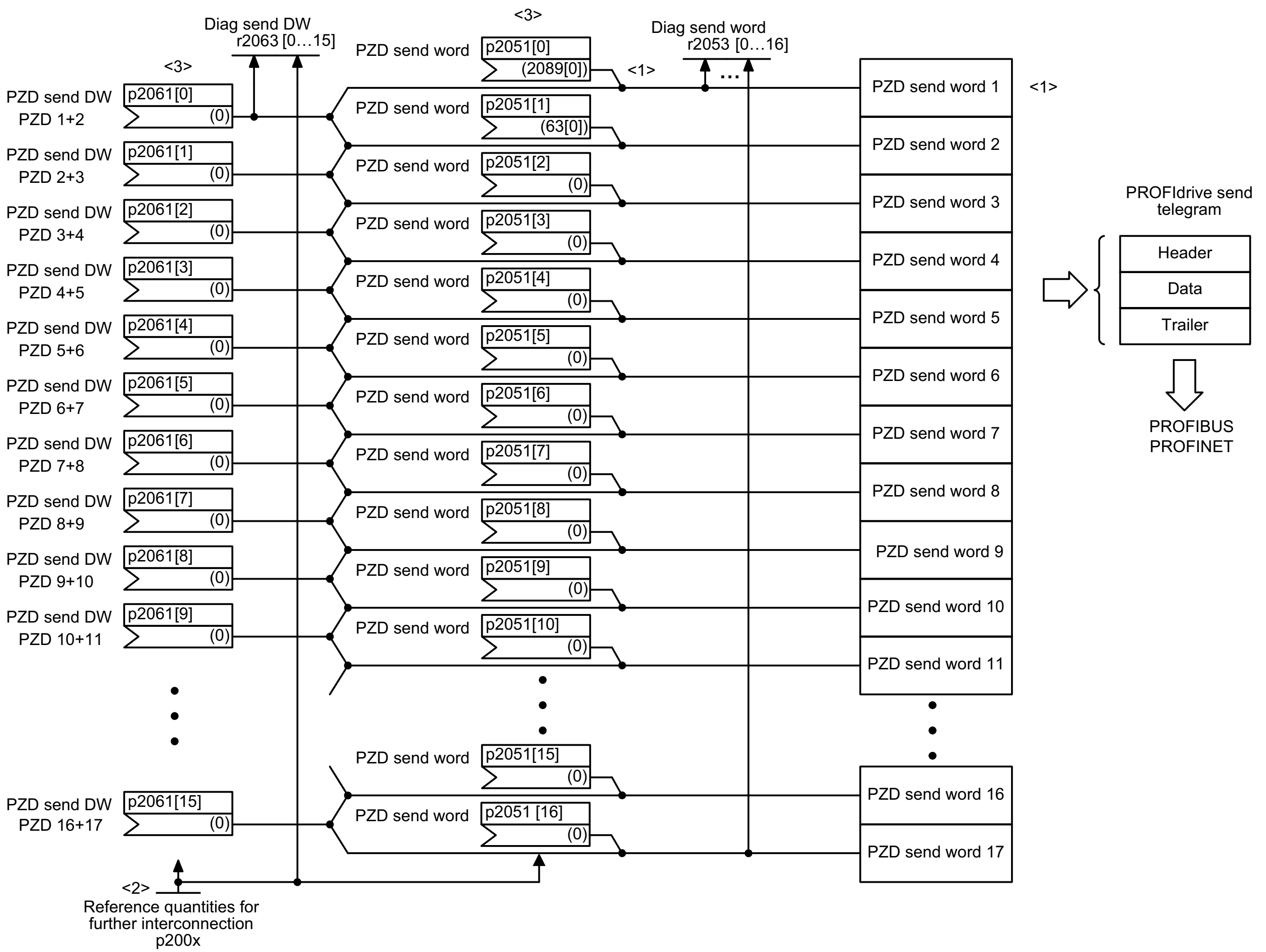
<3> The following representation applies for words: 4000 hex = 100 %.
The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
The following applies for temperature values: 100 °C -> 100 % = 4000 hex, 0 °C -> 0 %.

<4> 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.

<5> 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

PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP	fp_2468_97_61.vsd	Function diagram	- 2468 -
PROFIdrive - Receive telegram, free interconnection via BICO (p0922 = 999)	13.03.2018 V4.7_10	CU230P-2 DP/PN	



<1> To comply with the PROFIdrive profile, send word 1 must be used as status word 1 (ZSW1).

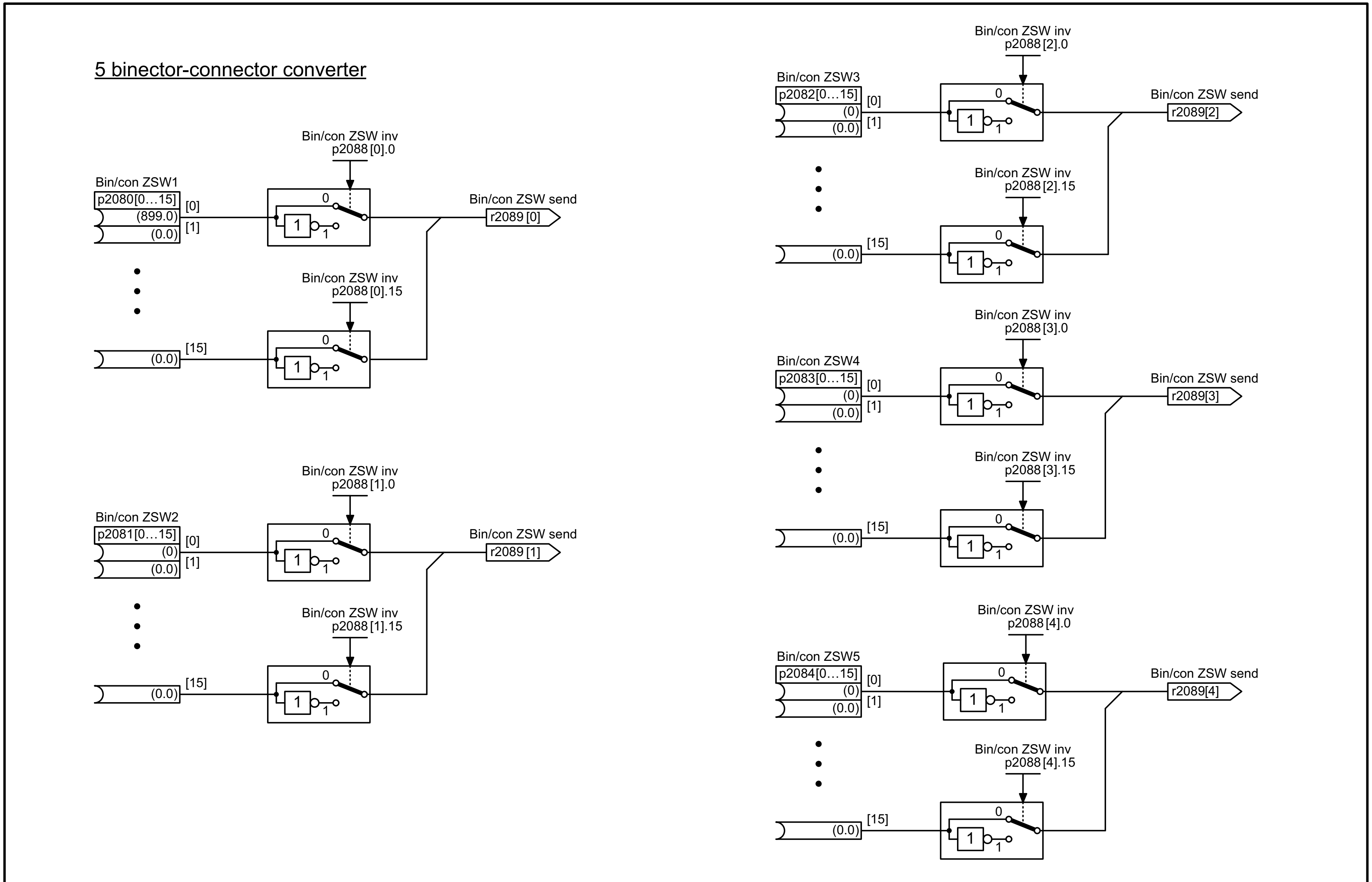
<2> Physical word values are inserted in the telegram as referenced variables. p200x apply as reference variables (telegram contents = 4000 hex, if the input variable has the value p200x).
The following applies for temperature values: 100° C -> 100 % = 4000 hex; 0° C -> 0%.

<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), EtherNet/IP					fp_2470_97_61.vsd	Function diagram	- 2470 -
PROFIdrive - Send telegram, free interconnection via BICO (p0922 = 999)					13.03.2018 V4.7_10	CU230P-2 DP/PN	

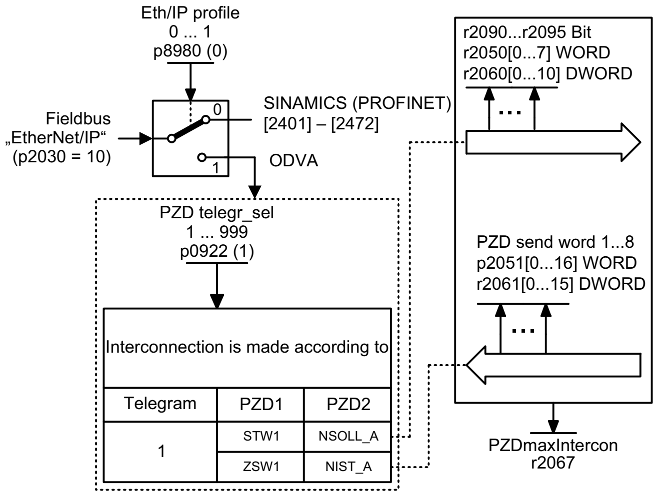
Fig. 3-30 2470 – PROFIdrive - send telegram, free interconnection via BICO (p0922 = 999)

Fig. 3-31 2472 – PROFIdrive - status words, free interconnection



1	2	3	4	5	6	7	8

PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP	fp_2472_97_51.vsd	Function diagram	- 2472 -
PROFIdrive - Status words, free interconnection	13.03.2018 V4.7_10	CU230P-2 DP/PN	



Signal targets for PZD receive signals

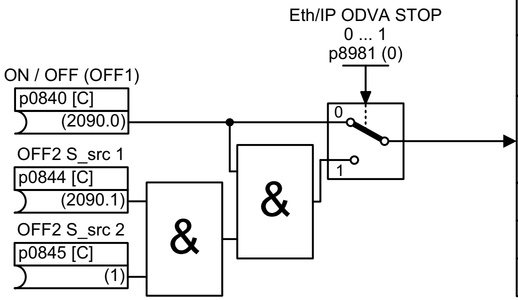
Signal	Equivalent at ODVA	PROFIdrive Signal No.	Interconnection parameter	Data type	Scaling
STW1	Instance 20, Byte 0, 1	1	(bit serial)	U16	-
NSOLL_A	Instance 20, Byte 2, 3	5	p1070 <1>	I16	4000 hex ≙p2000

Signal sources for PZD send signals

Signal	Equivalent at ODVA	PROFIdrive Signal No.	Interconnection parameter	Data type	Scaling
ZSW1	Instance 70, Byte 0, 1	2	(bit serial)	U16	-
NIST_A	Instance 70, Byte 2, 3	6	r0063	I16	4000 hex ≙p2000

Signal sources for Basic Speed Control (Instance 70), Byte 0, 1

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word
Bit 0	1 = Fault present (pulses inhibited)	p2080[3] = r2139.3	[2510]
Bit 1	Reserved		
Bit 2	1 = Operation enabled	p2080[2] = r0899.2	[2510]
Bit 3 … Bit 15	Reserved		



Signal targets for Basic Speed Control (Instance 20), Byte 0, 1

Signal	Meaning	Interconnection parameter	[Function diagram] internal control word
Bit 0	↑ = ON (pulses can be enabled) 0 = OFF	p0840[0] = r2090.0 p0844[0] = r2090.1 p0848[0] = r2090.2 p0852[0] = r2090.3	[2512]
Bit 1	Reserved		
Bit 2	1 = Acknowledge fault	p2103.0 = r2090.7	[2546]
Bit 3 … Bit 15	Reserved		

<1> p1070 is scaled via p8982.

ODVA: Open DeviceNet Vendor Association

1	2	3	4	5	6	7	8

PROFIdrive (PROFIBUS/PROFINET), EtherNet/IP	fp_2473_97_61.vsd	Function diagram	- 2473 -
EtherNet/IP - Control word / status word interconnection	13.03.2018 V4.7_10	CU230P-2 PN	

Fig. 3-32 2473 – EtherNet/IP - control word / status word interconnection

3.6 CANopen communication

Function diagrams

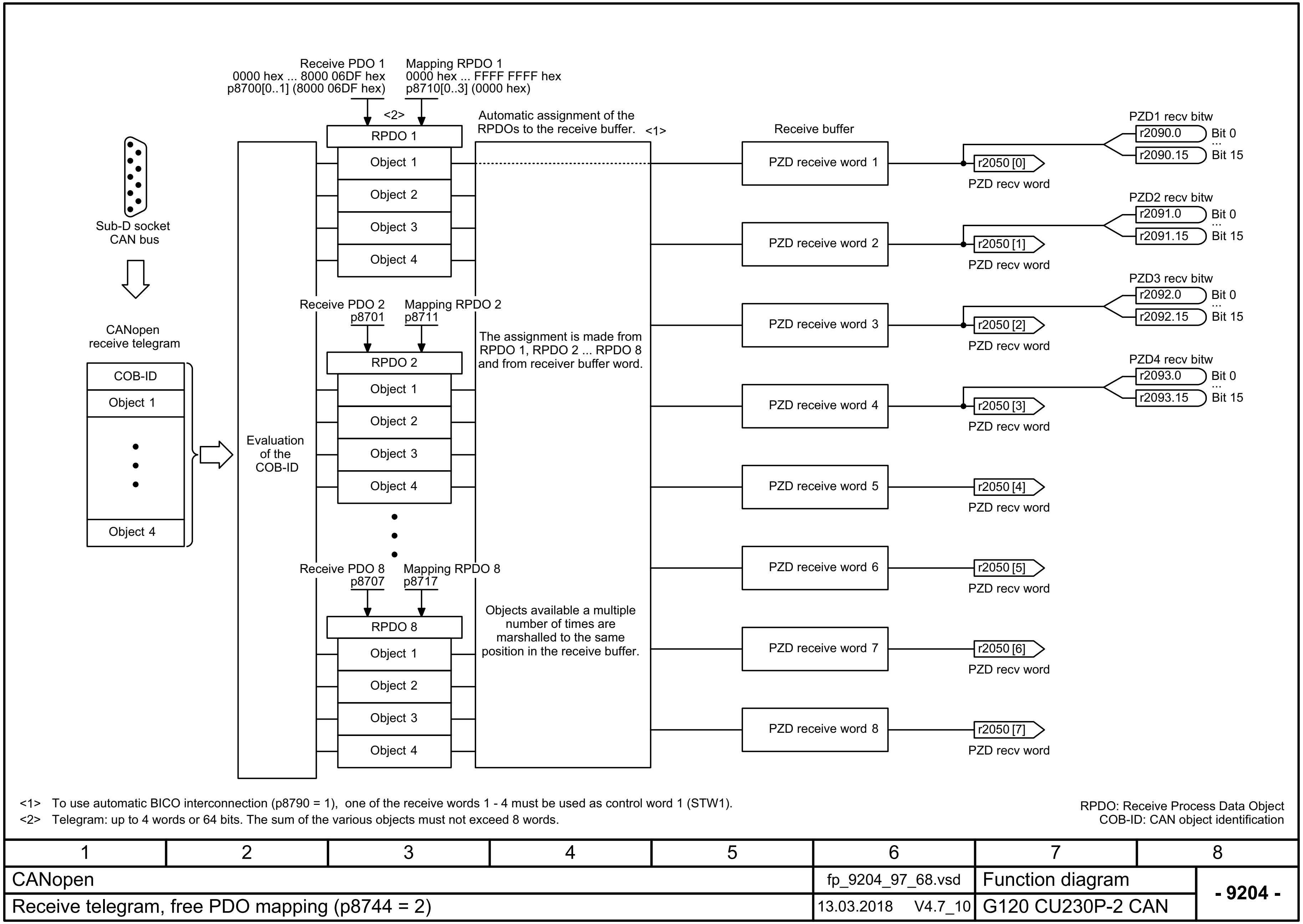
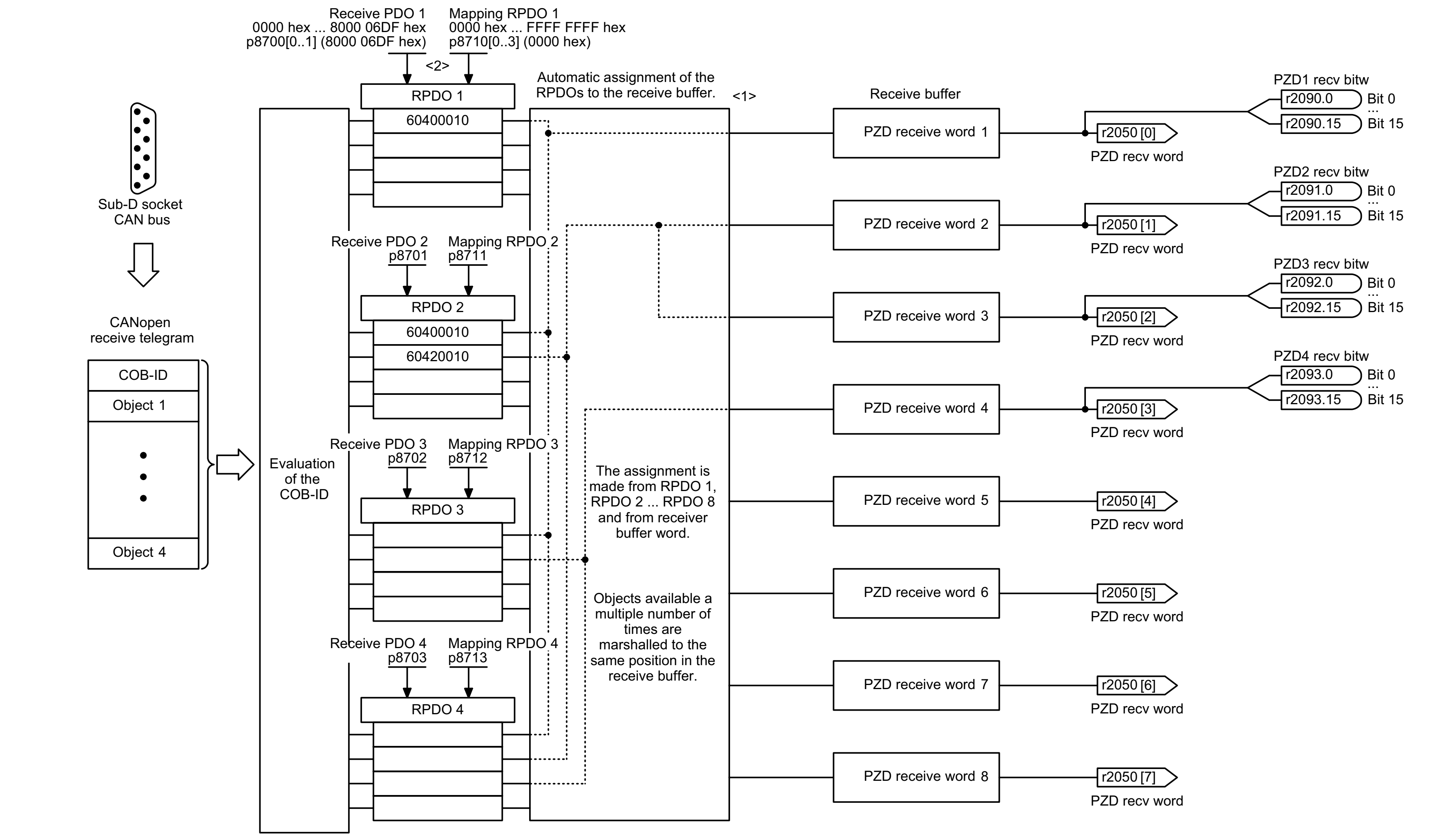


Fig. 3-33 9204 – Receive telegram, free PDO mapping (p8744 = 2)

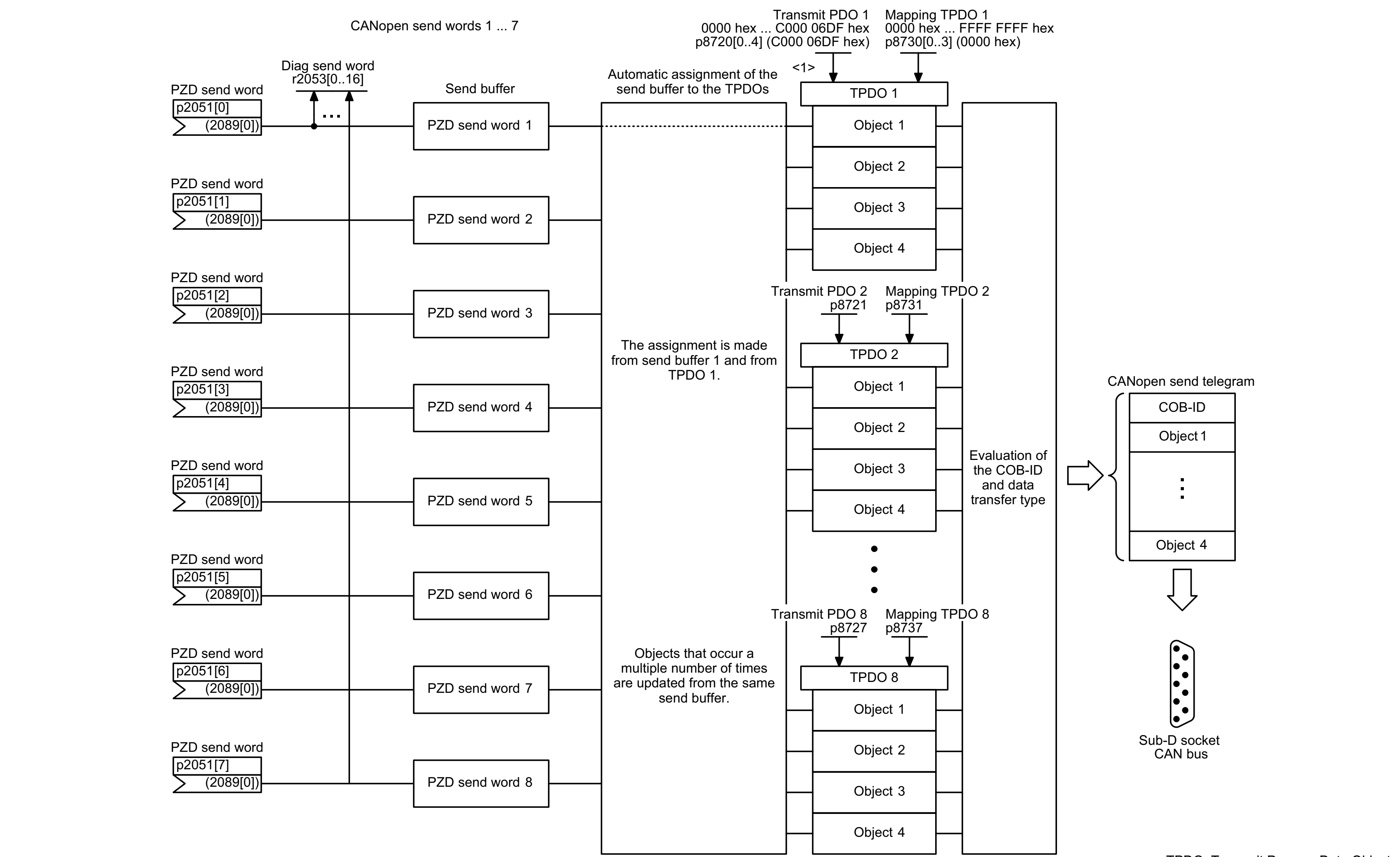
Fig. 3-34 9206 – Receive telegram, Predefined Connection Set (p8744 = 1)



<1> To use automatic BICO interconnection (p8790 = 1), one of the receive words 1 - 4 must be used as control word 1 (STW1).
<2> Telegram: up to 4 words or 64 bits. The sum of the various objects must not exceed 8 words.

RPDO: Receive Process Data Object
COB-ID: CAN object identification

1	2	3	4	5	6	7	8
CANopen					fp_9206_97_68.vsd	Function diagram	- 9206 -
Receive telegram, Predefined Connection Set (p8744 = 1)					13.03.2018 V4.7_10	G120 CU230P-2 CAN	



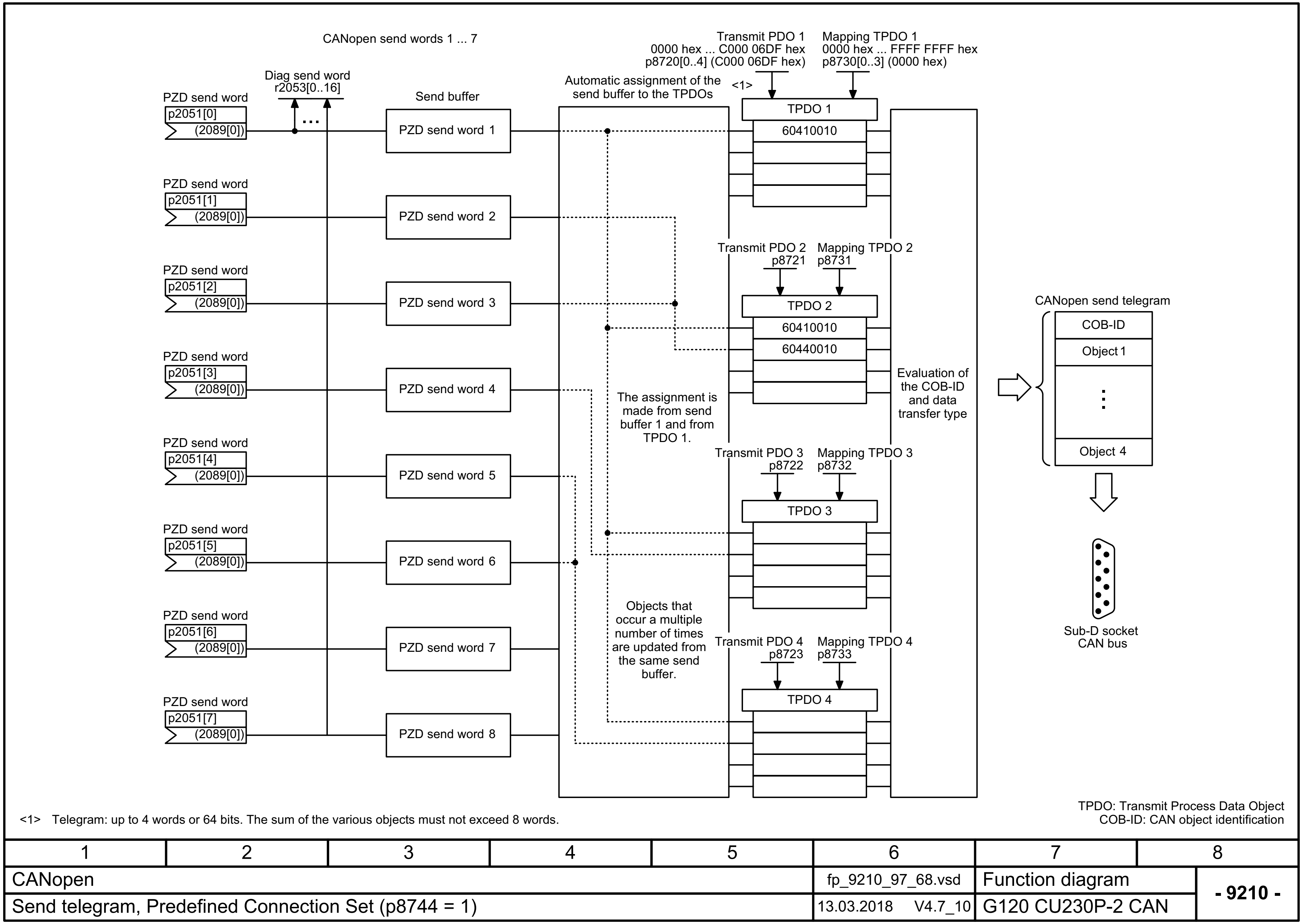
<1> Telegram: up to 4 words or 64 bits. The sum of the various objects must not exceed 8 words.

TPDO: Transmit Process Data Object
COB-ID: CAN object identification

1	2	3	4	5	6	7	8
CANopen					fp_9208_97_68.vsd	Function diagram	- 9208 -
Send telegram, free PDO mapping (p8744 = 2)					13.03.2018 V4.7_10	G120 CU230P-2 CAN	

Fig. 3-35 9208 – Send telegram, free PDO mapping (p8744 = 2)

Fig. 3-36 9210 – Send telegram, Predefined Connection Set (p8744 = 1)



Signal targets for control word CANopen (r8795)

Signal	Meaning	Interconnection parameters <1>	[Function diagram] internal control word	[Function diagram] signal target
STW.0	↑ = ON (pulses can be enabled) 0 = OFF1 (braking with RFG, then pulse suppression and ready for switching on)	p0840[0] = r2090.0	[2501.3]	Sequence control
STW.1	1 = No coast-down activated (enable possible) 0 = Activate coast-down (immediate pulse suppression and switching on inhibited)	p0844[0] = r2090.1	[2501.3]	Sequence control
STW.2	1 = No Quick stop activated (enable possible) 0 = Activate Quick stop (OFF3 ramp p1135, then pulse suppression and switching on inhibited)	p0848[0] = r2090.2	[2501.3]	Sequence control
STW.3	1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (suppress pulses)	p0852[0] = r2090.3	[2501.3]	Sequence control
STW.4	1 = Enable ramp-function generator 0 = Inhibit ramp-function generator	p1140[0] = r2090.4 <2>	[2501.3]	[3070]
STW.5	1 = Continue ramp-function generator 0 = Freeze ramp-function generator	p1141[0] = r2090.5 <2>	[2501.3]	[3070]
STW.6	1 = Enable setpoint 0 = Inhibit setpoint (set the ramp-function generator input to zero)	p1142[0] = r2090.6 <2>	[2501.3]	[3070]
STW.7	↑ = Acknowledge fault	p2103[0] = r2090.7	[2546.1]	[8060]
STW.8	1 = Stop	<2> <3>	-	[3070]
STW.9	Reserved	-	-	-
STW.10	Reserved	-	-	-
STW.11	Can be freely connected	pxxxx[y] = r2090.11	-	-
STW.12	Can be freely connected	pxxxx[y] = r2090.12	-	-
STW.13	Can be freely connected	pxxxx[y] = r2090.13	-	-
STW.14	Can be freely connected	pxxxx[y] = r2090.14	-	-
STW.15	Can be freely connected	pxxxx[y] = r2090.15	-	-

<1> Depending on the position of the CANopen control word in p8750, the number of the binector to be connected changes.
<2> Not taken into account for the automatic control word interconnection (p8790).
<3> Interconnection via p8791.

1	2	3	4	5	6	7	8

CANopen	fp_9220_97_68.vsd	Function diagram	- 9220 -
CANopen control word interconnection	13.03.2018 V4.7_10	G120 CU230P-2 CAN	

Fig. 3-37 9220 – CANopen control word interconnection

Fig. 3-38 9226 – Status word CANopen (r8784)

	Bit No.	Status word CANopen
From sequence control	0	1 = Ready for switching on
From sequence control	1	1 = Ready for operation (DC link loaded, pulses inhibited)
From sequence control	2	1 = Operation enabled (drive follows n_set)
From fault buffer [8060]	3	1 = Fault present
From sequence control	4	1 = No coast down active
From sequence control	5	1 = No Quick stop active
From sequence control	6	1 = Switching on inhibited active
From alarm buffer [8065]	7	1 = Alarm present
Status word bit 8 p8785 (0)	8	Freely interconnectable (BI: p8785)
Bit 9 = 1 --> Ready to exchange process data	9	1 = Control requested
CANopen control word bit 8 = 0: from speed signals [8011.8] (r2197.7) CANopen control word bit 8 = 1: from speed signals [8010.8] (r2199.0) <2>	10	1 = Target reached <1>
From status word speed controller [2522]	11	1 = Torque limit reached
From speed signals [8010.8] (r2199.0)	12	1 = Velocity equal to zero
	13	Reserved
Status word bit 14 p8786 (0)	14	Freely interconnectable (BI: p8786)
Status word bit 15 p8787 (0)	15	Freely interconnectable (BI: p8787)

Status word r8784

<1> With setpoint channel: connect p2151 with r1119 [8011.3].
<2> Only if p8791 = 1 or 3.

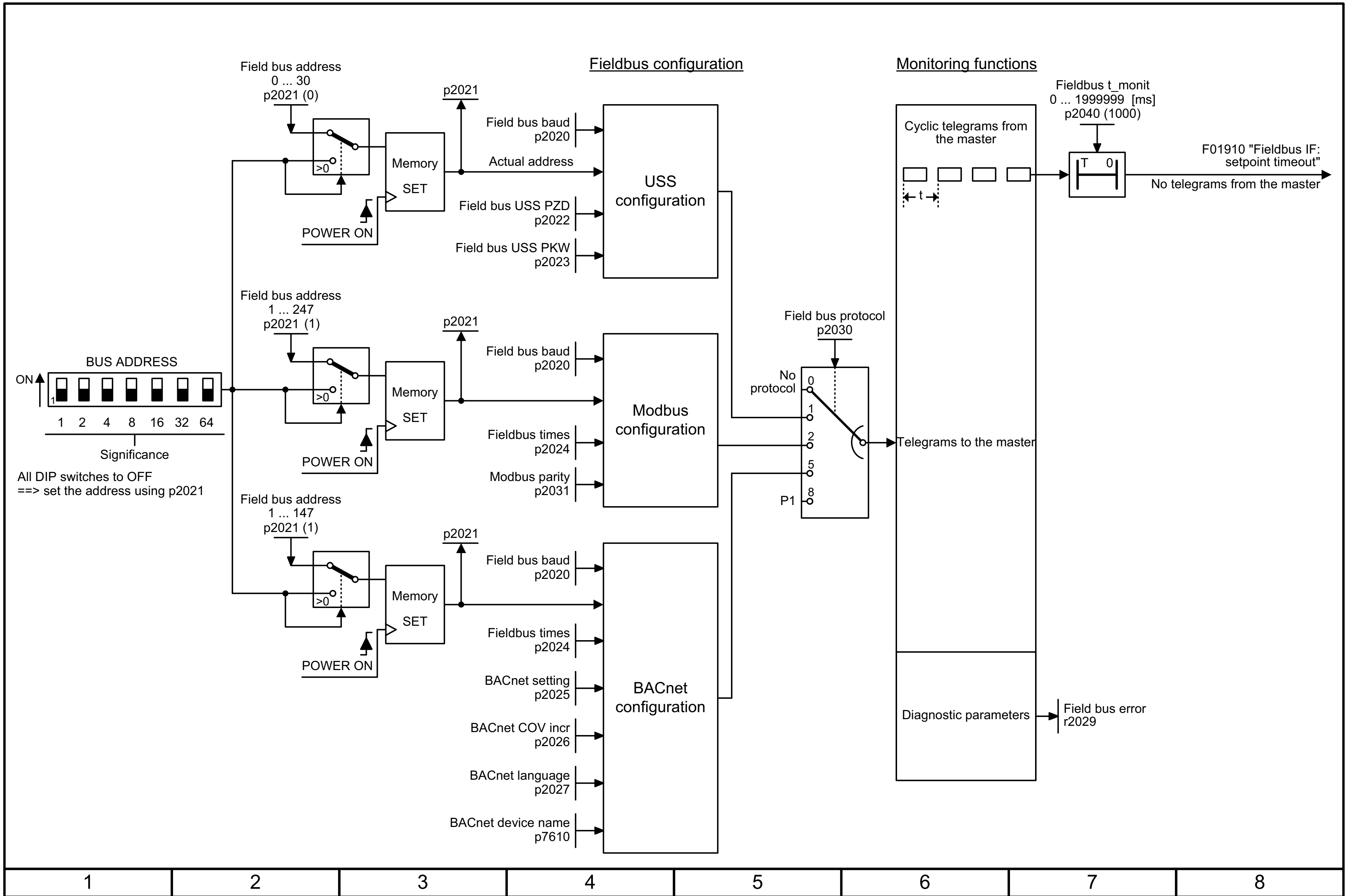
1	2	3	4	5	6	7	8

CANopen	fp_9226_97_68.vsd	Function diagram	- 9226 -
Status word, CANopen (r8784)	13.03.2018 V4.7_10	G120 CU230P-2 CAN	

3.7 Communication, fieldbus interface (USS, Modbus, BACnet)

Function diagrams

Fig. 3-39 9310 – Configuration, addresses and diagnostics



Fieldbus Interface (USS, Modbus, BACnet)	fp_9310_97_01.vsd	Function diagram	- 9310 -
Configuration, addresses and diagnostics	13.03.2018 V4.7_10	CU230P-2 BT/HVAC	

Signal targets for fieldbus STW1

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]	[3070], [3080]	-
STW1.5	1 = Continue ramp-function generator 0 = Freezes the ramp-function generator	p1141[0] = r2090.5	[2501.3]	[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]	[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 <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

Fieldbus Interface (USS, Modbus, BACnet)	fp_9342_97_62.vsd	Function diagram	- 9342 -
STW1 control word interconnection	13.03.2018 V4.7_10	CU230P-2 BT/HVAC	

Fig. 3-40 9342 – STW1 control word interconnection

Fig. 3-41 9352 – ZSW1 status word interconnection

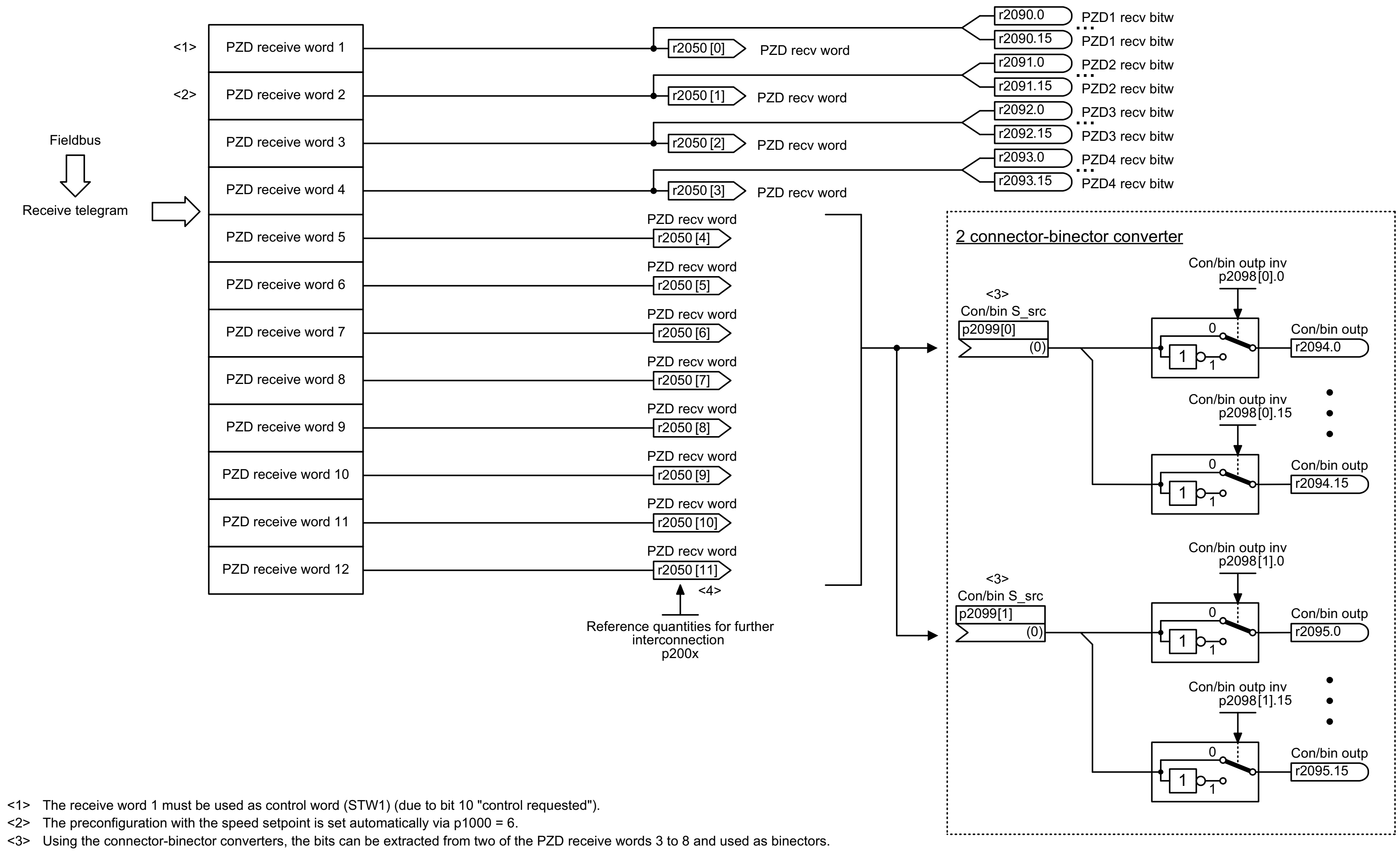
Signal sources for fieldbus ZSW1

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	Reserved	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]	[8021]	✔

<1> The ZSW1 is generated using the binector-connector converter (BI: p2080[0..15], inversion: p2088[0].0 … p2088[0].15).
<2> The drive is ready to accept data.

1	2	3	4	5	6	7	8

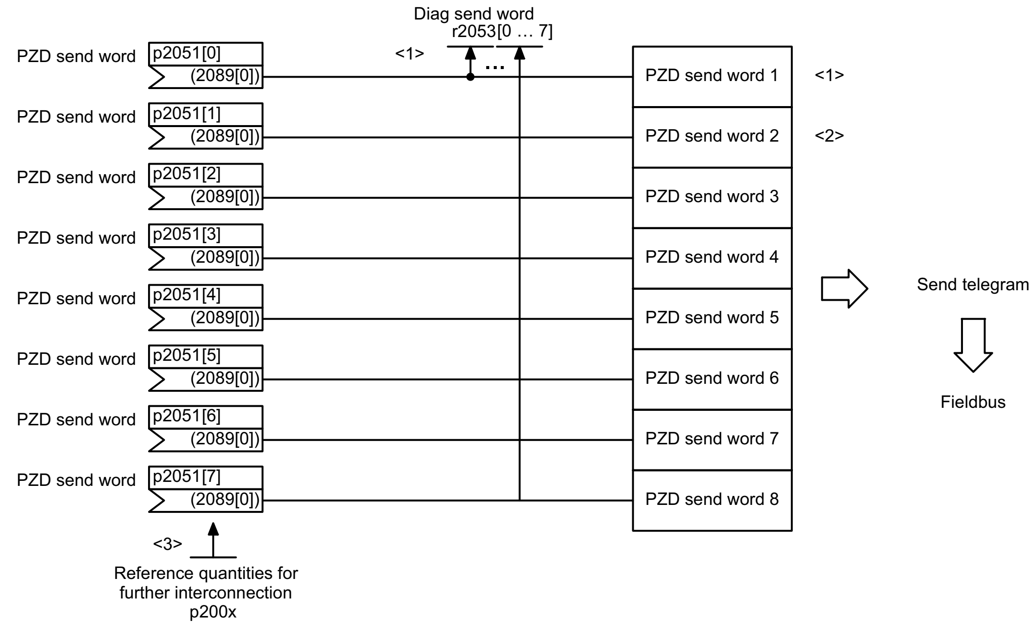
Fieldbus Interface (USS, Modbus, BACnet)	fp_9352_97_62.vsd	Function diagram	- 9352 -
ZSW1 status word interconnection	13.03.2018 V4.7_10	CU230P-2 BT/HVAC	



<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 %.

1	2	3	4	5	6	7	8
Fieldbus Interface (USS, Modbus, BACnet)					fp_9360_97_52.vsd	Function diagram	- 9360 -
Receive telegram, free interconnection via BICO (p0922 = 999)					13.03.2018 V4.7_10	CU230P-2 BT/HVAC	

Fig. 3-42 9360 – Receive telegram, free interconnection via BICO (p0922 = 999)

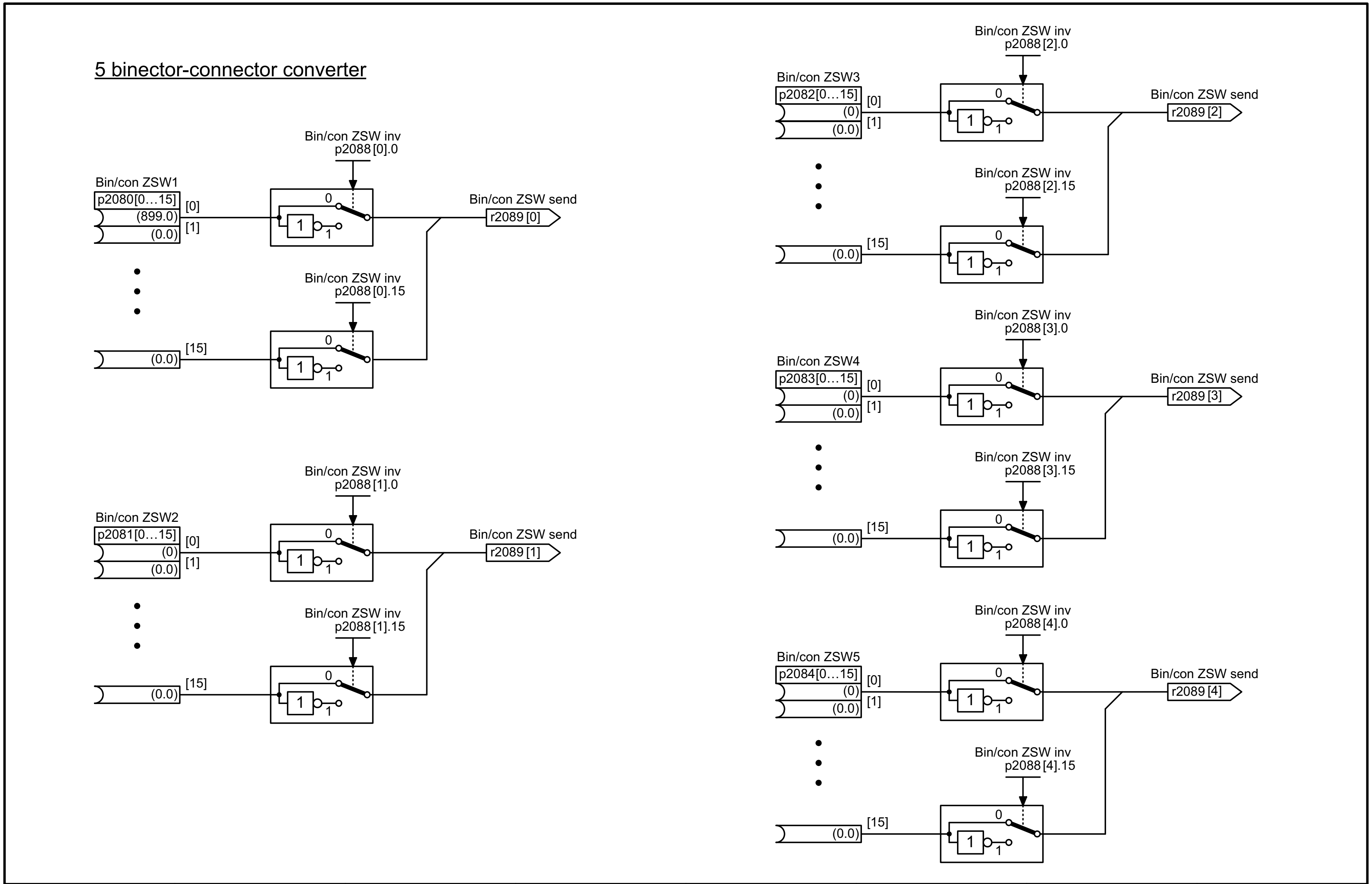


<1> The send word 1 must be used as status word (ZSW1).
<2> The preconfiguration with the speed setpoint is set automatically via p1000 = 6.
<3> Physical word values are inserted in the telegram as referenced variables. p200x apply as reference variables (telegram contents = 4000 hex, if the input variable has the value p200x).
The following applies for temperature values: 100° C -> 100 % = 4000 hex; 0° C -> 0%.

1	2	3	4	5	6	7	8

Fieldbus Interface (USS, Modbus, BACnet)	fp_9370_97_62.vsd	Function diagram	- 9370 -
Send telegram, free interconnection via BICO (p0922 = 999)	13.03.2018 V4.7_10	CU230P-2 BT/HVAC	

Fig. 3-43 9370 – Send telegram, free interconnection via BICO (p0922 = 999)

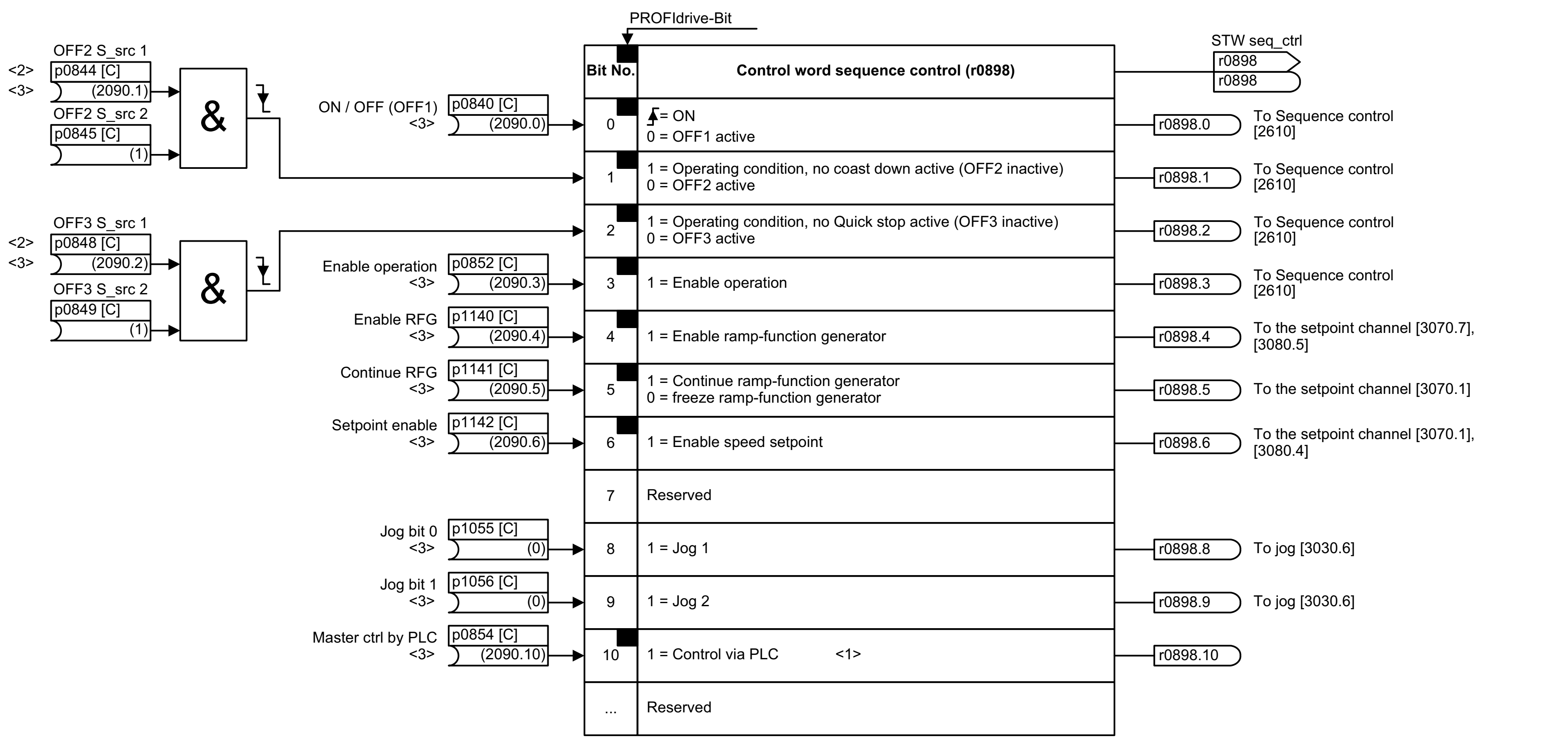


1	2	3	4	5	6	7	8
Fieldbus Interface (USS, Modbus, BACnet)					fp_9372_97_52.vsd	Function diagram	- 9372 -
Status words, free interconnection					13.03.2018 V4.7_10	CU230P-2 BT/HVAC	

Fig. 3-44 9372 – Status words, free interconnection

3.8 Internal control/status words

Function diagrams



<1> Bit 10 in STW1 must be set to ensure that the drive accepts the process data.

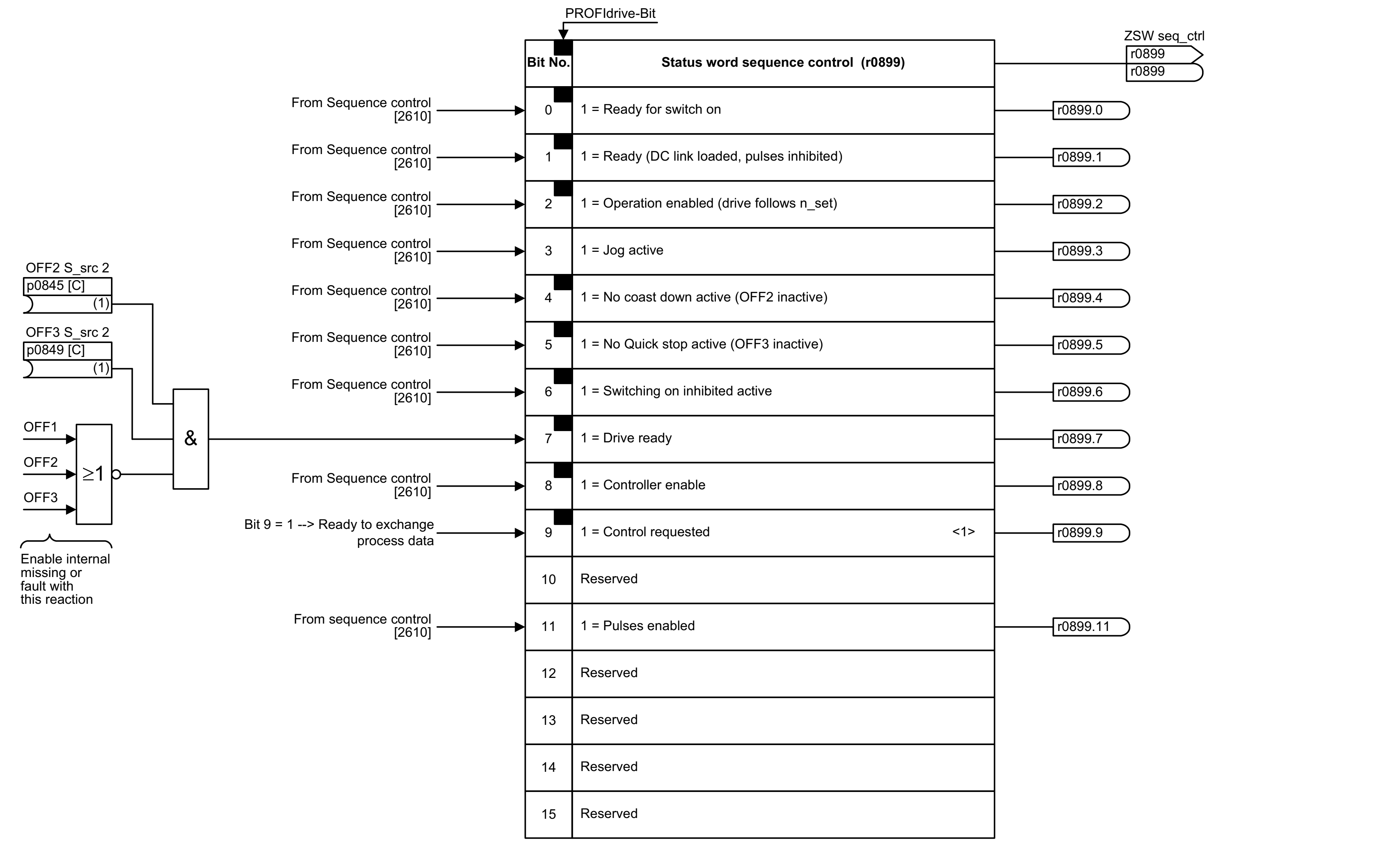
<2> PROFIdrive interconnection:
For PROFIdrive standard telegrams, the upper inputs are connected with PROFIdrive-STW1 [2420].
Only relevant for CDS0.

<3> When the master control is retrieved, predefined by STARTER or IOP.
With active Extended Service Mode (ESM) predefined by ESM.

1	2	3	4	5	6	7	8
Internal control/status words					fp_2501_97_01.vsd	Function diagram	- 2501 -
Control word, sequence control (r0898)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-45 2501 – Control word, sequence control (r0898)

Fig. 3-46 2503 – Status word, sequence control (r0899)



Bit No.	Status word sequence control (r0899)
0	1 = Ready for switch on
1	1 = Ready (DC link loaded, pulses inhibited)
2	1 = Operation enabled (drive follows n_set)
3	1 = Jog active
4	1 = No coast down active (OFF2 inactive)
5	1 = No Quick stop active (OFF3 inactive)
6	1 = Switching on inhibited active
7	1 = Drive ready
8	1 = Controller enable
9	1 = Control requested <1>
10	Reserved
11	1 = Pulses enabled
12	Reserved
13	Reserved
14	Reserved
15	Reserved

<1> The drive is ready to accept data.

1	2	3	4	5	6	7	8

Internal control/status words	fp_2503_97_01.vsd	Function diagram	- 2503 -
Status word, sequence control (r0899)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-47 2505 – Control word, setpoint channel (r1198)

STW setpoint chan
r1198
r1198

Input (BI)	Signal	Bit No.	Control word setpoint channel (r1198)	Output	Destination
p1020 [C] (0)	n_set_fixed Bit 0	0	1 = Fixed setpoint, bit 0	r1198.0	To fixed speed setpoints [3010.2], [3011.2] To control word 2 [2513.2]
p1021 [C] (0)	n_set_fixed Bit 1	1	1 = Fixed setpoint, bit 1	r1198.1	To fixed speed setpoints [3010.2], [3011.2] To control word 2 [2513.2]
p1022 [C] (0)	n_set_fixed Bit 2	2	1 = Fixed setpoint, bit 2	r1198.2	To fixed speed setpoints [3010.2], [3011.2] To control word 2 [2513.2]
p1023 [C] (0)	n_set_fixed Bit 3	3	1 = Fixed setpoint, bit 3	r1198.3	To fixed speed setpoints [3010.2], [3011.2] To control word 2 [2513.2]
		4	Reserved		
p1110 [C] (1)	Inhib neg dir	5	1 = Inhibit negative direction of rotation	r1198.5	To direction of rotation limiting and direction of rotation reversal [3040.3]
p1111 [C] (0)	Inhib pos dir	6	1 = Inhibit positive direction of rotation	r1198.6	To direction of rotation limiting and direction of rotation reversal [3040.5]
		7	Reserved		
		8	Reserved		
		9	Reserved		
		10	Reserved		
p1113 [C] (2090.11)	Setp inv	11	1 = Setpoint inversion	r1198.11	To direction of rotation limiting and direction of rotation reversal [3040.2]
		12	Reserved		
p1035 [C] (2090.13)	Mop raise	13	1 = Motorized potentiometer, raise	r1198.13	To control word 1 [2512.4] To the motorized potentiometer [3020.1]
p1036 [C] (2090.14)	Mop lower	14	1 = Motorized potentiometer, lower	r1198.14	To control word 1 [2512.4] To the motorized potentiometer [3020.1]
p1122 [C] (0)	Bypass RFG	15	1 = Bypass ramp-function generator	r1198.15	To the ramp-function generator [3070.3]

1	2	3	4	5	6	7	8

Internal control/status words	fp_2505_97_51.vsd	Function diagram	- 2505 -
Control word, setpoint channel (r1198)	13.03.2018 V4.7_10	G120 CU230P-2	

Reference	Source	Signal	Bit No.	Status word 1 (r0052)	Output
					ZSW 1 r0052
[2503.7]	r0899.0	ZSW seq_ctrl	0	1 = Ready for switch on	r0052.0
[2503.7]	r0899.1	ZSW seq_ctrl	1	1 = Ready (DC link loaded, pulses inhibited)	r0052.1
[2503.7]	r0899.2	ZSW seq_ctrl	2	1 = Operation enabled	r0052.2
[2548.7]	r2139.3	ZSW fault/alarm 1	3	1 = Fault present (pulses inhibited) <1>	r0052.3 (Signal is inverted if connected to a Digital Output.)
[2503.7]	r0899.4	ZSW seq_ctrl	4	1 = No coast down active (OFF2 inactive)	r0052.4
[2503.7]	r0899.5	ZSW seq_ctrl	5	1 = No Quick stop active (OFF3 inactive)	r0052.5
[2503.7]	r0899.6	ZSW seq_ctrl	6	1 = Switching on inhibited active	r0052.6
[2548.7]	r2139.7	ZSW fault/alarm 1	7	1 = Alarm present	r0052.7
[2534.7]	r2197.7	ZSW monitor 1	8	1 = No deviation setpoint/actual speed	r0052.8
[2503.7]	r0899.7	ZSW seq_ctrl	9	1 = Control request	r0052.9
[2534.7]	r2197.6	ZSW monitor 1	10	1 = Maximum speed reached (f_act ≥ p1082 (f_max)) 0 = f_act < p1082 (f_max)	r0052.10
[2526.7]	r0056.13	ZSW cl-loop ctrl	11	0 = I,M,P limit reached	r0052.11
			12	Reserved	
[2548.7]	r2135.14	ZSW fault/alarm 2	13	0 = Alarm motor overtemperature	r0052.13
[2534.7]	r2197.3	ZSW monitor 1	14	1 = Motor rotates forwards	r0052.14
[2548.7]	r2135.15	ZSW fault/alarm 2	15	0 = Alarm drive converter overload	r0052.15

<1> When p1210 > 0, the source is r1214.10.

1	2	3	4	5	6	7	8

Internal control/status words	fp_2510_97_01.vsd	Function diagram	- 2510 -
Status word 1 (r0052)	13.03.2018 V4.7_10	G120 CU230P-2	

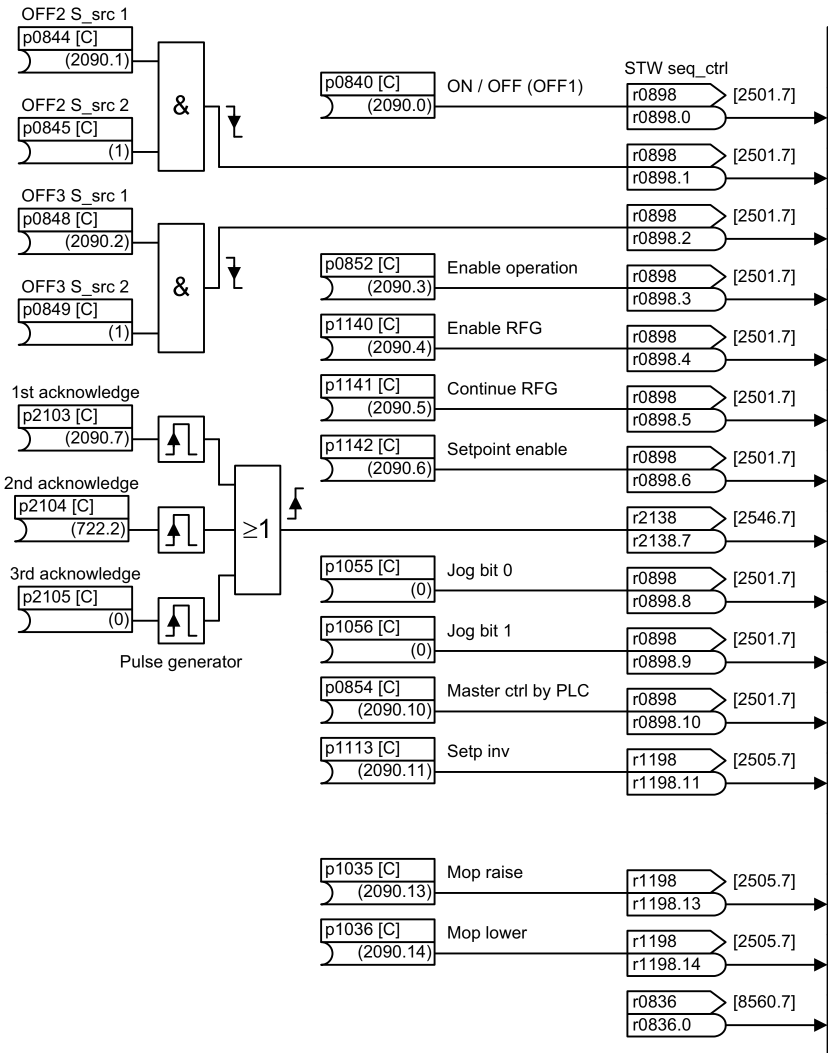
Fig. 3-48 2510 – Status word 1 (r0052)

Fig. 3-49 2511 – Status word 2 (r0053)

Reference	Input	Signal	Bit No.	Status word 2 (r0053)	ZSW 2 r0053
[7017.5]	r1239 / r1239.8	DCBRK ZSW	0	1 = DC braking active	r0053.0
[2534.7]	r2197 / r2197.5	ZSW monitor 1	1	1 = |n_act| > p1226 (n_standstill)	r0053.1
[2534.7]	r2197 / r2197.0	ZSW monitor 1	2	1 = |n_act| > p1080 (n_min)	r0053.2
[2534.7]	r2197 / r2197.8	ZSW monitor 1	3	1 = I_act ≥ p2170	r0053.3
[2534.7]	r2197 / r2197.2	ZSW monitor 1	4	1 = |n_act| > p2155	r0053.4
[2534.7]	r2197 / r2197.1	ZSW monitor 1	5	1 = |n_act| ≤ p2155	r0053.5
[2534.7]	r2197 / r2197.4	ZSW monitor 1	6	1 = |n_act| ≥ r1119 (n_set)	r0053.6
[2534.7]	r2197 / r2197.9	ZSW monitor 1	7	1 = Vdc ≤ p2172	r0053.7
[2534.7]	r2197 / r2197.10	ZSW monitor 1	8	1 = Vdc > p2172	r0053.8
[3080.7]	r1199 / r1199.2	RFG ZSW	9	1 = Ramping finished	r0053.9
[7958.7]	r2349 / r2349.10	Tec_ctrl status	10	1 = Technology controller output at the lower limit	r0053.10
[7958.7]	r2349 / r2349.11	Tec_ctrl status	11	1 = Technology controller output at the upper limit	r0053.11
			12	Reserved	
			13	Reserved	
			14	Reserved	
			15	Reserved	

1	2	3	4	5	6	7	8
Internal control/status words					fp_2511_97_59.vsd	Function diagram	- 2511 -
Status word 2 (r0053)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-50 2512 – Control word 1 (r0054)



Bit No.	Control word 1 (r0054)	
0	0 = OFF1, Shutdown via ramp, followed by pulse inhibit 1 = ON, operating condition (edge-controlled)	Sequence control Setpoint channel
1	1 = OFF2: Electrical stop, pulse inhibit, motor coasts down 0 = Operating condition	Sequence control
2	1 = OFF3: Quick stop 0 = Operating condition	Sequence control Setpoint channel
3	1 = Operation enable	Sequence control
4	1 = Ramp-function generator enable	Setpoint channel
5	1 = Continue ramp-function generator	Setpoint channel
6	1 = Speed setpoint enable	Setpoint channel
7	1 = Acknowledge fault	Sequence control
8	1 = Jog bit 0	Sequence control Setpoint channel
9	1 = Jog bit 1	Sequence control Setpoint channel
10	1 = Master ctrl by PLC	Bit 10 in STW1 must be set to ensure that the drive accepts the process data.
11	1 = Directions reversal (setpoint)	Setpoint channel
12	Reserved	
13	1 = Motorized potentiometer raise	Setpoint channel
14	1 = Motorized potentiometer lower	Setpoint channel
15	1 = CDS bit 0	Sequence control

1	2	3	4	5	6	7	8
Internal control/status words					fp_2512_97_51.vsd	Function diagram	- 2512 -
Control word 1 (r0054)					13.03.2018 V4.7_10	G120 CU230P-2	

Suppl STW: r0055 / r0055

Source	Parameter	Signal	Bit No.	Supplementary control word (r0055)	Target
[2505.7]	r1198 / r1198.0	STW setpoint chan	0	1 = Fixed setp bit 0	Fixed speed values
[2505.7]	r1198 / r1198.1	STW setpoint chan	1	1 = Fixed setp bit 1	Fixed speed values
[2505.7]	r1198 / r1198.2	STW setpoint chan	2	1 = Fixed setp bit 2	Fixed speed values
[2505.7]	r1198 / r1198.3	STW setpoint chan	3	1 = Fixed setp bit 3	Fixed speed values
[8565.7]	r0837 / r0837.0	DDS selected	4	1 = DDS select. bit 0	Sequence control
[8565.7]	r0837 / r0837.1	DDS selected	5	1 = DDS select. bit 1	Sequence control
			6	Reserved	
			7	Reserved	
[7958.6]	r2349 / r2349.0	Tec_ctrl status	8	1 = Technology controller enable	Technology controller
[7017.7]	r1239 / r1239.11	DCBRK ZSW	9	1 = DC brake enable	DC braking control
			10	Reserved	
			11	Reserved	
			12	Reserved	
[2546.7]	r2138 / r2138.13	STW fault/alarm	13	0 = External fault 1 (F07860)	Sequence control
			14	Reserved	
[8560.7]	r0836 / r0836.1	CDS selected	15	1 = CDS bit 1	Sequence control

1	2	3	4	5	6	7	8

Internal control/status words	fp_2513_97_01.vsd	Function diagram	- 2513 -
Supplementary control word (r0055)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-51 2513 – Supplementary control word (r0055)

ZSW n_ctrl → r1407

Source	Bit No.	Status word speed controller (r1407)	Output
			r1407
	0	1 = U/f control active	r1407.0
From the changeover, closed-loop control types	1	1 = Sensorless operation active	r1407.1
	2	Reserved	r1407.2
From sequence control [2610] From the speed controller [6040.7]	3	1 = Speed control active	r1407.3
	...	Reserved	
From the speed controller [6040.7]	5	1 = Speed controller, I component held	r1407.5
From the speed controller [6040.7]	6	1 = Speed controller, I component set	r1407.6
From the torque setpoint [6060.8]	7	1 = Torque limit reached	r1407.7
From the torque setpoint [6060.5], [6060.7]	8	1 = Torque limiting, upper, active	r1407.8 → Ramp-function generator tracking [3080.1] Speed controller [6040.4] Motor locked/stalled [8012.2]
From the torque setpoint [6060.5], [6060.7]	9	1 = Torque limiting, lower, active	r1407.9
	10	Reserved	r1407.10
From the speed setpoint [6030.4]	11	1 = Speed setpoint limited	r1407.11
	12	1 = Ramp-function generator set	r1407.12
	13	1 = Sensorless operation due to a fault	r1407.13
	14	1 = I/f control active	r1407.14
From the torque setpoint [6060.5]	15	1 = Torque limit reached (without pre-control)	r1407.15
	...	Reserved	
From the speed limiting [6640.8]	17	1 = Speed limiting control active	r1407.17
	...	Reserved	
	23	1 = Acceleration model activated	r1407.23

1	2	3	4	5	6	7	8
Internal control/status words					fp_2522_97_01.vsd	Function diagram	- 2522 -
Status word, speed controller (r1407)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-52 2522 – Status word, speed controller (r1407)

ZSW cl-loop ctrl

Inputs	Bit No.	Status word closed-loop control (r0056)		Output	
				r0056	
				r0056	
	0	1 = Initialization completed		r0056.0	
	1	1 = De-magnetization completed		r0056.1	
	2	1 = Pulse enable available		r0056.2	
	3	Reserved			
<1> [6722.7] <2> [6837.3]	4	1 = Magnetization completed		r0056.4	
<1> [6301.4] <3> [6851.5]	5	1 = Starting boost active		r0056.5	
<1> [6301.2] <3> [6851.2]	6	1 = Acceleration voltage active	<4>	r0056.6	
<1> [6730.4], [6731.4], [6792.4] <2> [6841.4], [6842.4], [6843.4] <3> [6856.4]	7	1 = Frequency, negative		r0056.7	[6710.1]
<1> [6722.3] <2> [6835.5], [6837.3]	8	1 = Field weakening active		r0056.8	
<1> [6714.8] <2> [6833.8]	9	1 = Voltage limit active		r0056.9	
<1> [6310.8] <3> [6853.8]	10	1 = Slip limiting active	<4>	r0056.10	
<1> [6730.4], [6731.4], [6792.4] <2> [6841.4], [6842.4], [6843.4] <3> [6856.4]	11	1 = Frequency limit active		r0056.11	
	12	1 = Current limiting controller, voltage output active	<4>	r0056.12	[8012.5]
<1>[6060.7] <3>[6826.8]	13	1 = Current/torque limiting active	<5>	r0056.13	[8012.5]
<1> [6220.8], [6320.8] <2> [6827.8] <3> [6854.8]	14	1 = Vdc_max controller active	<6>	r0056.14	[6031.6], [6710.2]
<1> [6220.8], [6320.8] <2> [6827.8] <3> [6854.8]	15	1 = Vdc_min controller active	<6>	r0056.15	[6710.1]

<1> p0096 = 0: Expert
<2> p0096 = 2: Dynamic Drive Control (DDC)
<3> p0096 = 1: Standard Drive Control (SDC)
<4> Only for U/f control.
<5> Only for vector control.
<6> Only for Power Modules PM230/PM240/PM330.

1	2	3	4	5	6	7	8

Internal control/status words	fp_2526_97_01.vsd	Function diagram	- 2526 -
Status word, closed-loop control (r0056)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-53 2526 – Status word, closed-loop control (r0056)

Fig. 3-54 2530 – Status word, current control (r1408)

	Bit No.	Status word current control (r1408)	
			ZSW I_ctrl r1408 / r1408
	0	1 = Current controller active	r1408.0
[6714.5]	1	1 = Id controller I comp. limitation	r1408.1
	2	Reserved	
[6714.8]	3	1 = Voltage limitation	r1408.3
	4	Reserved	
	5	Reserved	
	6	Reserved	
	7	Reserved	
	8	Reserved	
	9	Reserved	
[6730.3]	10	1 = Speed adaptation limitation	r1408.10
	11	Reserved	
[2536.7] r2198 / r2198.7 ZSW monitor 2	12	1 = Motor stalled	r1408.12
	13	1 = Separately-excited synchronous motor is excited	r1408.13
	14	1 = Current model SESM: Magnetizing excitation current set to 0	r1408.14
	15	Reserved	

1	2	3	4	5	6	7	8
Internal control/status words					fp_2530_97_64.vsd	Function diagram	- 2530 -
Status word, current control (r1408)					13.03.2018 V4.7_10	G120 CU230P-2	

ZSW monitor 1

Source	Bit No.	Status word, monitoring functions 1 (r2197)		Output
				r2197 / r2197
From monitoring functions [8022.8]	0	1 = |n_act| ≤ n_min p1080		r2197.0
From speed signals [8010.8]	1	1 = |n_act| ≤ speed threshold value 2 (p2155)	<1>	r2197.1
(From speed signals [8010.8], inverted: 1)	2	1 = |n_act| > speed threshold value 2 (p2155)	<1>	r2197.2
From speed signals [8011.8]	3	1 = n_act ≥ 0		r2197.3
From monitoring functions [8022.8]	4	1 = |n_act| ≥ n_set		r2197.4
From monitoring functions [8022.8]	5	1 = |n_act| ≤ n_standstill p1226		r2197.5
From speed signals [8010.8]	6	1 = |n_act| > n_max		r2197.6
From speed signals [8011.8]	7	1 = Speed setpoint - actual value deviation within tolerance t_off		r2197.7
From monitoring functions [8022.8]	8	1 = I_act ≥ I_threshold p2170		r2197.8
From monitoring functions [8022.8]	9	1 = Vdc_act ≤ Vdc_threshold p2172		r2197.9
From monitoring functions [8022.8]	10	1 = Vdc_act > Vdc_threshold p2172		r2197.10
From monitoring functions [8022.8]	11	1 = Load missing		r2197.11
	12	Reserved		
	13	1 = |n_act| > n_max (F07901)		r2197.13
	14	Reserved		
	15	Reserved		

<1> n_act = smoothed speed actual value r2169 [8010.2].

1	2	3	4	5	6	7	8

Internal control/status words	fp_2534_97_01.vsd	Function diagram	- 2534 -
Status word, monitoring functions 1 (r2197)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-55 2534 – Status word, monitoring functions 1 (r2197)

Fig. 3-56 2536 – Status word, monitoring functions 2 (r2198)

ZSW monitor 2: r2198, r2198

Input	Bit No.	Status word, monitoring functions 2 (r2198)	Output
	0	Reserved	
	1	Reserved	
	2	Reserved	
	3	Reserved	
From speed signals [8011.8]	4	1 = |n_set| < p2161	r2198.4
From speed signals [8011.8]	5	1 = n_set > 0	r2198.5
From torque messages, motor locked/stalled [8012.7]	6	1 = Motor blocked	r2198.6
From torque messages, motor locked/stalled [8012.8]	7	1 = Motor stalled	r2198.7 [2530.2]
From monitoring functions [8022.8]	8	1 = |I_act| < I_threshold p2170	r2198.8
	9	Reserved	
	10	Reserved	
From load monitoring [8013.8]	11	1 = Load in the alarm range	r2198.11
From load monitoring [8013.8]	12	1 = Load in the fault range	r2198.12
	13	Reserved	
	14	Reserved	
	15	Reserved	

1	2	3	4	5	6	7	8

Internal control/status words	fp_2536_97_01.vsd	Function diagram	- 2536 -
Status word, monitoring functions 2 (r2198)	13.03.2018 V4.7_10	G120 CU230P-2	

PROFIdrive-Bit

ZSW monitor 3

Input	Bit No.	Status word, monitoring functions 3 (r2199)	Output
			r2199 / r2199
From speed signals [8010.8]	0	1 = |n_act| < speed threshold value 3 (p2161) <1>	r2199.0
From speed signals [8010.8]	1	1 = f or n comparison value reached or exceeded (p2141)	r2199.1
	2	Reserved	
	3	Reserved	
From speed signals [8011.8]	4	1 = Speed setpoint - actual value deviation within tolerance t_on	r2199.4
From speed signals [8011.8]	5	1 = Ramp-up/ramp-down completed 0 = Ramp-function generator active	r2199.5 [8012.1]
	6	Reserved	
	7	Reserved	
	8	Reserved	
	9	Reserved	
	10	Reserved	
	11	Reserved	
	12	Reserved	
	13	Reserved	
	14	Reserved	
	15	Reserved	

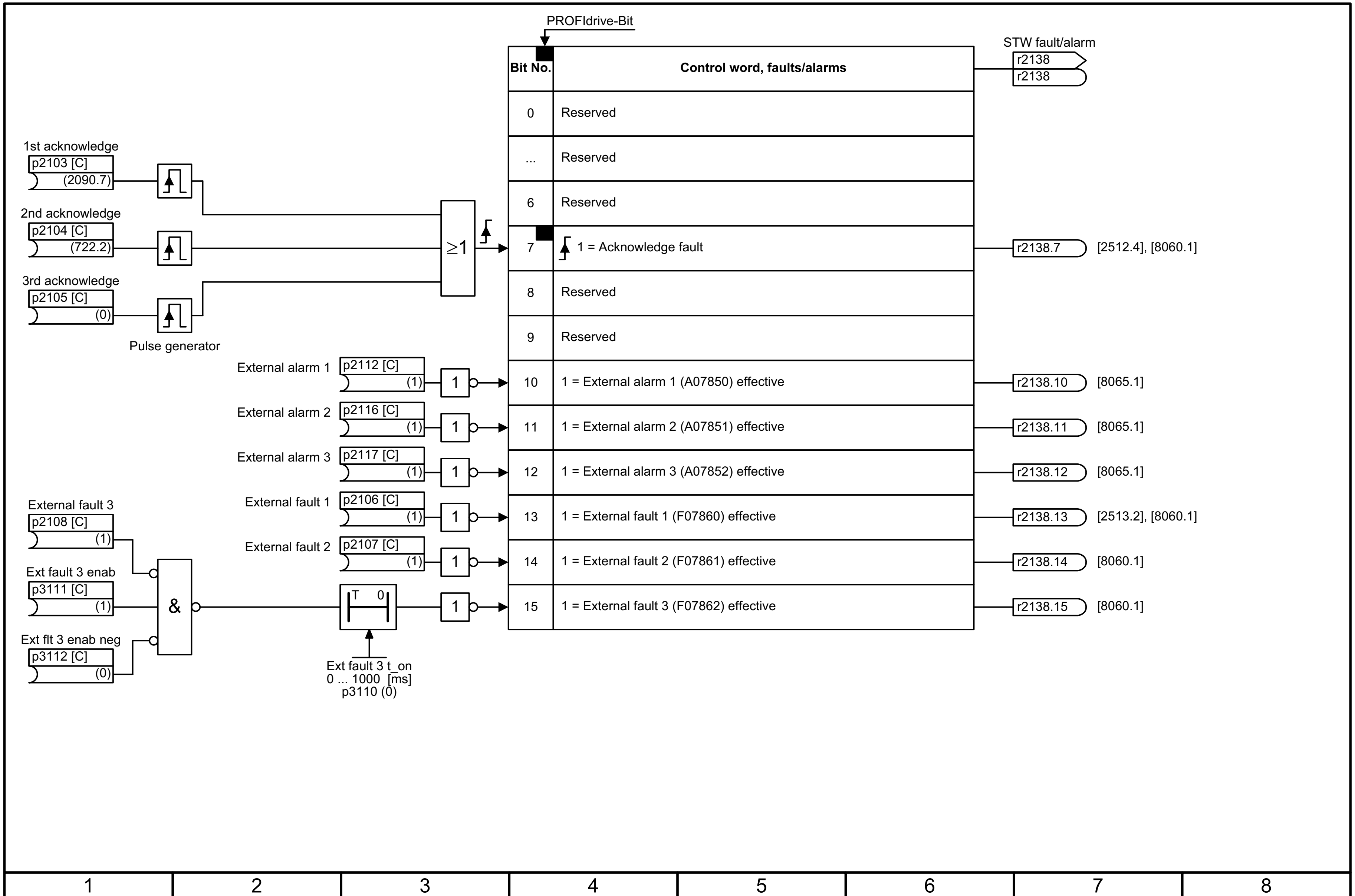
<1> n_act = smoothed speed actual value r2169 [8010.2].

1	2	3	4	5	6	7	8

Internal control/status words	fp_2537_97_01.vsd	Function diagram	- 2537 -
Status word, monitoring functions 3 (r2199)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-57 2537 – Status word, monitoring functions 3 (r2199)

Fig. 3-58 2546 – Control word, faults/alarms (r2138)



Internal control/status words	fp_2546_97_51.vsd	Function diagram	- 2546 -
Control word, faults/alarms (r2138)	13.03.2018 V4.7_10	G120 CU230P-2	

ZSW fault/alarm 1: r2139

Input	Bit No.	Status word, faults/alarms 1	Output
	0	1 = Acknowledgment running	r2139.0
	1	1 = Acknowledgment required	r2139.1
	...	Reserved	
From the fault buffer [8060.6]	3	1 = Fault present	r2139.3 [2510.2]
	...	Reserved	
	6	1 = Internal signal 1 present	r2139.6
From the alarm buffer [8065.4]	7	1 = Alarm present	r2139.7 [2510.2]
	8	1 = Internal signal 2 present	r2139.8
	...	Reserved	
From the alarm buffer [8065.4]	11	1 = Alarm class bit 0	r2139.11
From the alarm buffer [8065.4]	12	1 = Alarm class bit 1	r2139.12
From the alarm buffer [8065.4]	13	1 = Maintenance required	r2139.13
From the alarm buffer [8065.4]	14	1 = Maintenance urgently required	r2139.14
From the fault buffer [8060.6]	15	1 = Fault gone/can be acknowledged	r2139.15

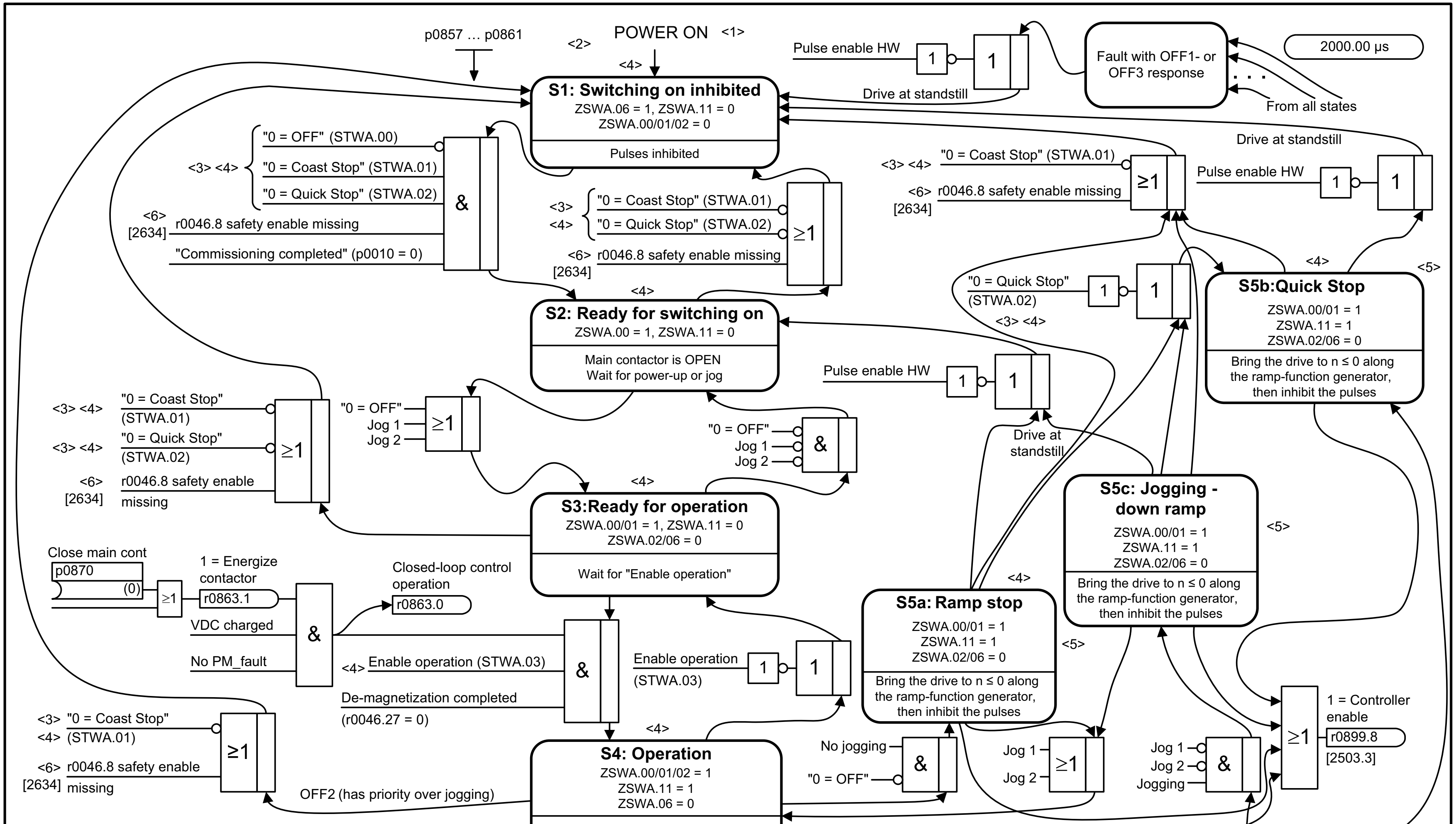
ZSW fault/alarm 2: r2135

Input	Bit No.	Status word, faults/alarms 2	Output
	0 ... 11	Reserved	
From the thermal monitoring, motor [8016.8]	12	1 = Fault motor overtemperature	r2135.12
From the thermal monitoring, power module [8021.8]	13	1 = Fault, thermal overload, power module	r2135.13
From the thermal monitoring, motor [8016.8]	14	1 = Alarm motor overtemperature	r2135.14 [2510.2]
From the thermal monitoring, power module [8021.8]	15	1 = Alarm, thermal overload, power module	r2135.15 [2510.2]

1	2	3	4	5	6	7	8

Internal control/status words	fp_2548_97_61.vsd	Function diagram	- 2548 -
Status word, faults/alarms 1 and 2 (r2139 and r2135)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-59 2548 – Status word, faults/alarms 1 and 2 (r2139 and r2135)

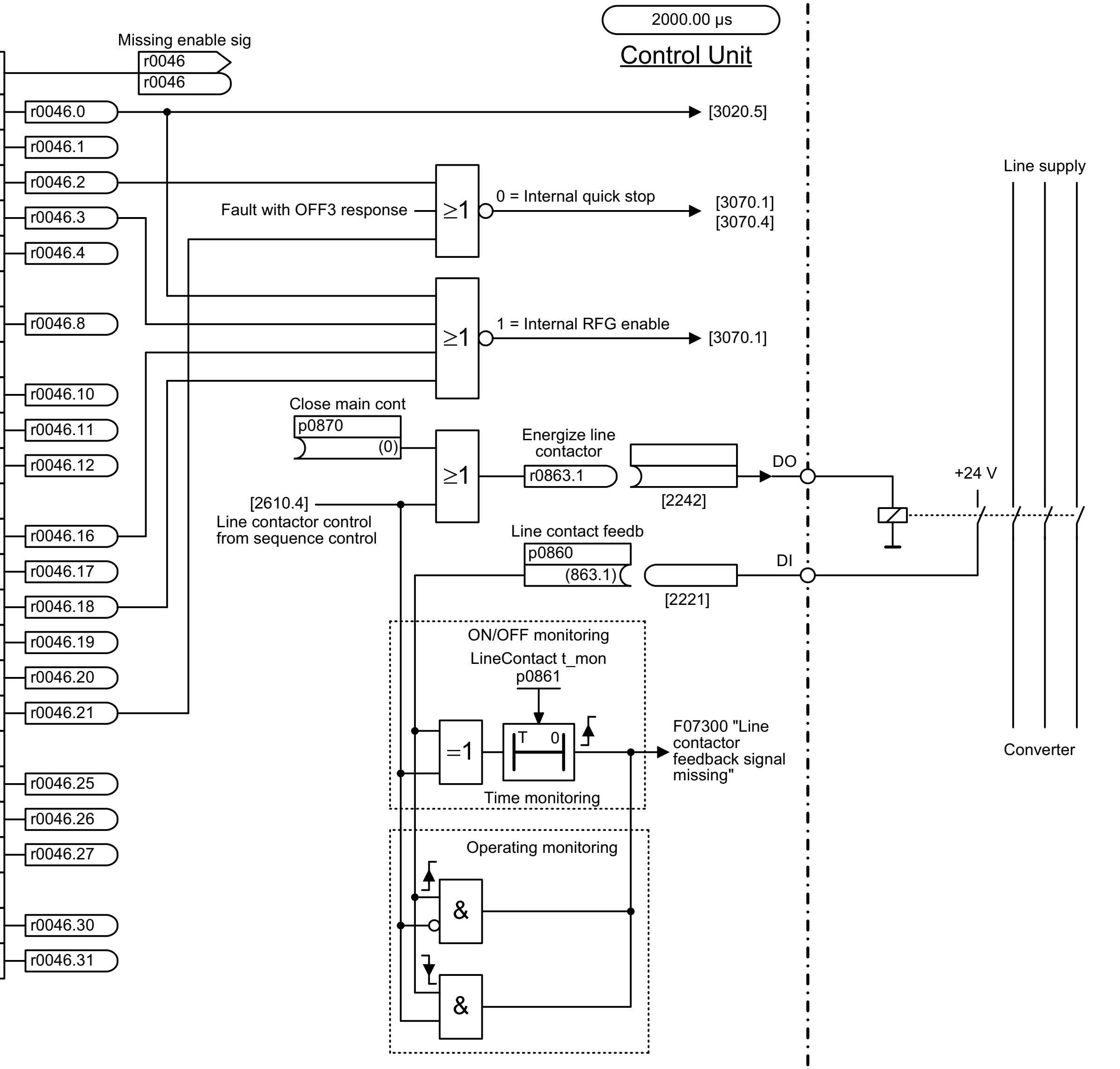


<1> POWER ON = 24 V electronics supply OFF --> ON or RESET button.
<2> The sequence control is implemented according to the PROFIdrive profile.
<3> These control commands can also be triggered by a fault response.
<4> STWA.xx = control word, sequence control, bit xx (r0898) [2501]; ZSWA.xx = status word, sequence control bit xx (r0899) [2503].
<5> The parameters p1226, p1227 and p1228 influence this status.
<6> STO via terminal on Power Module.

1	2	3	4	5	6	7	8
Internal control/status words					fp_2610_97_01.vsd	Function diagram	- 2610 -
Sequence control - Sequencer					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-60 2610 – Sequence control - Sequencer

Bit No.	Missing enable signals (r0046)
0	1 = OFF1 enable missing
1	1 = OFF2 enable missing
2	1 = OFF3 enable missing
3	1 = Operation enable missing
4	1 = DC current brake, enable missing
...	Reserved
8	1 = Safety enable missing
...	Reserved
10	1 = Ramp-function generator enable missing
11	1 = Ramp-function generator start missing
12	1 = Setpoint enable missing
...	Reserved
16	1 = OFF1 enable internal missing
17	1 = OFF2 enable internal missing
18	1 = OFF3 enable internal missing
19	1 = Pulse enable internal missing
20	1 = DC current brake, internal enable missing
21	1 = PU enable missing
...	Reserved
25	1 = Function Bypass active
26	1 = Drive inactive or not operational
27	1 = Demagnetizing not completed
...	Reserved
30	1 = Speed controller inhibited
31	1 = Jog setpoint active



1	2	3	4	5	6	7	8

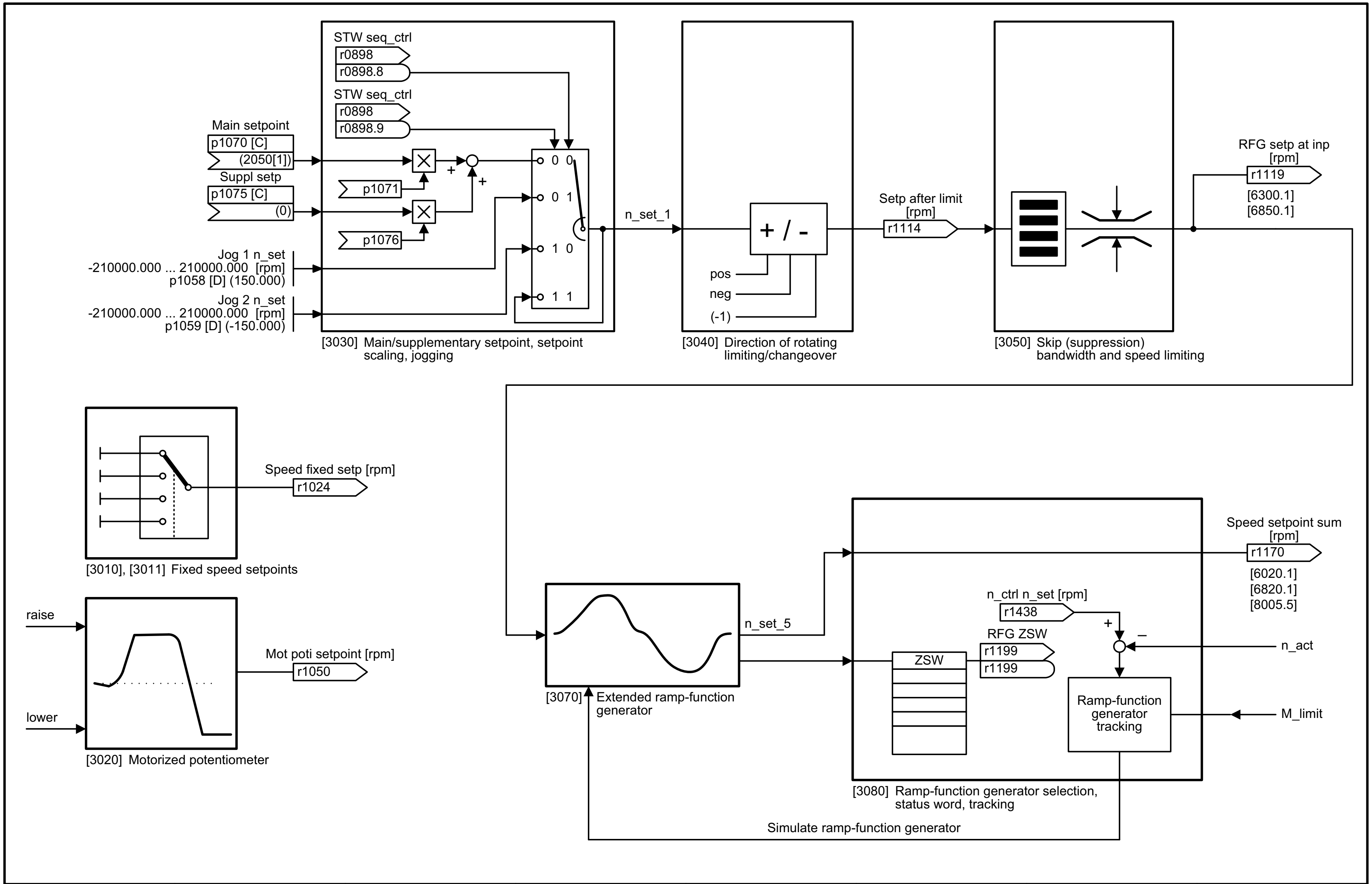
Internal control/status words	fp_2634_97_01.vsd	Function diagram	- 2634 -
Sequence control - Missing enable signals, line contactor control	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-61 2634 – Sequence control - missing enable signals, line contactor control

3.9 Setpoint channel

Function diagrams

Fig. 3-62 3001 – Overview



1	2	3	4	5	6	7	8
Setpoint channel					fp_3001_97_01.vsd	Function diagram	- 3001 -
Overview					13.03.2018 V4.7_10	G120 CU230P-2	

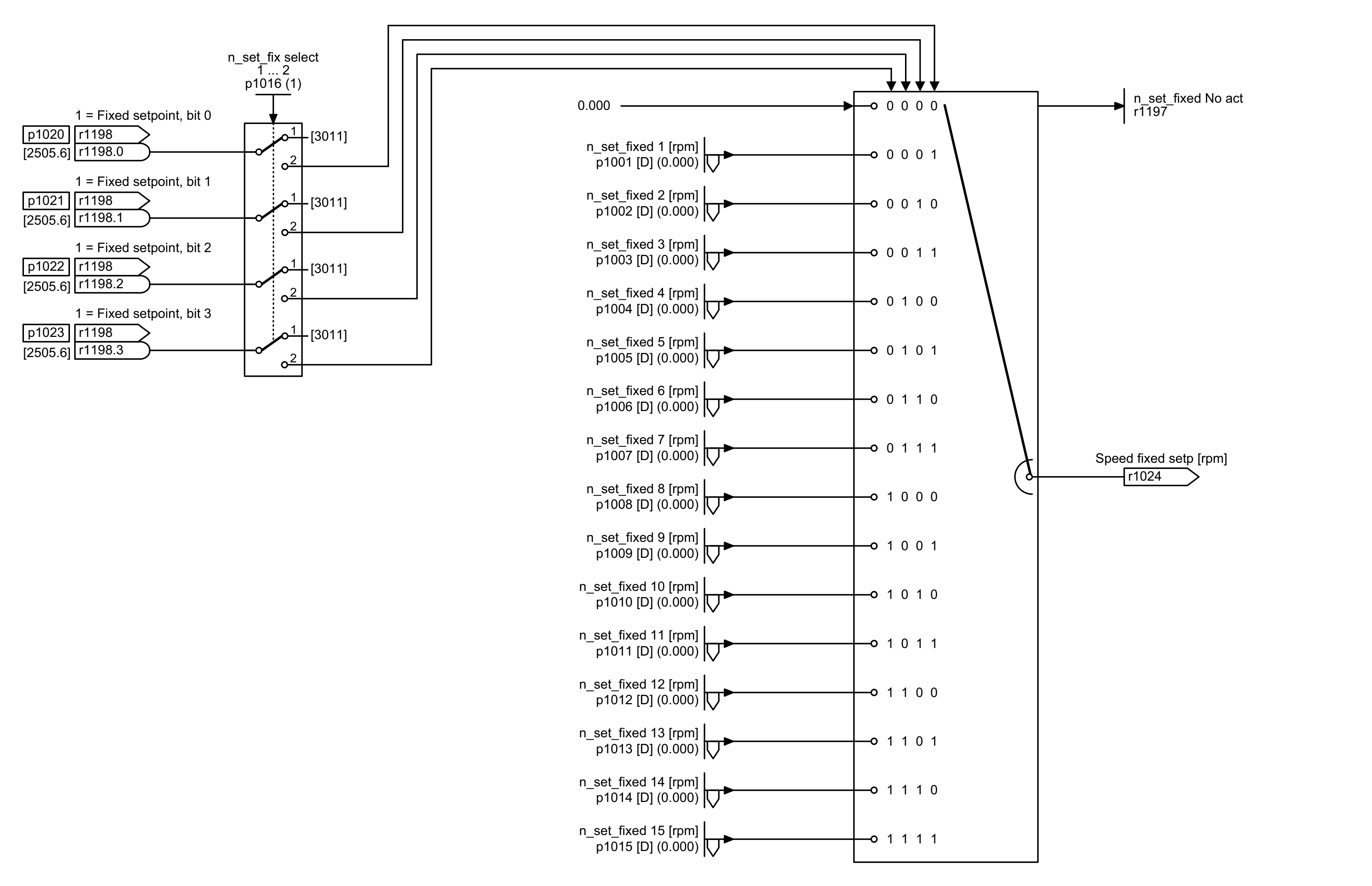
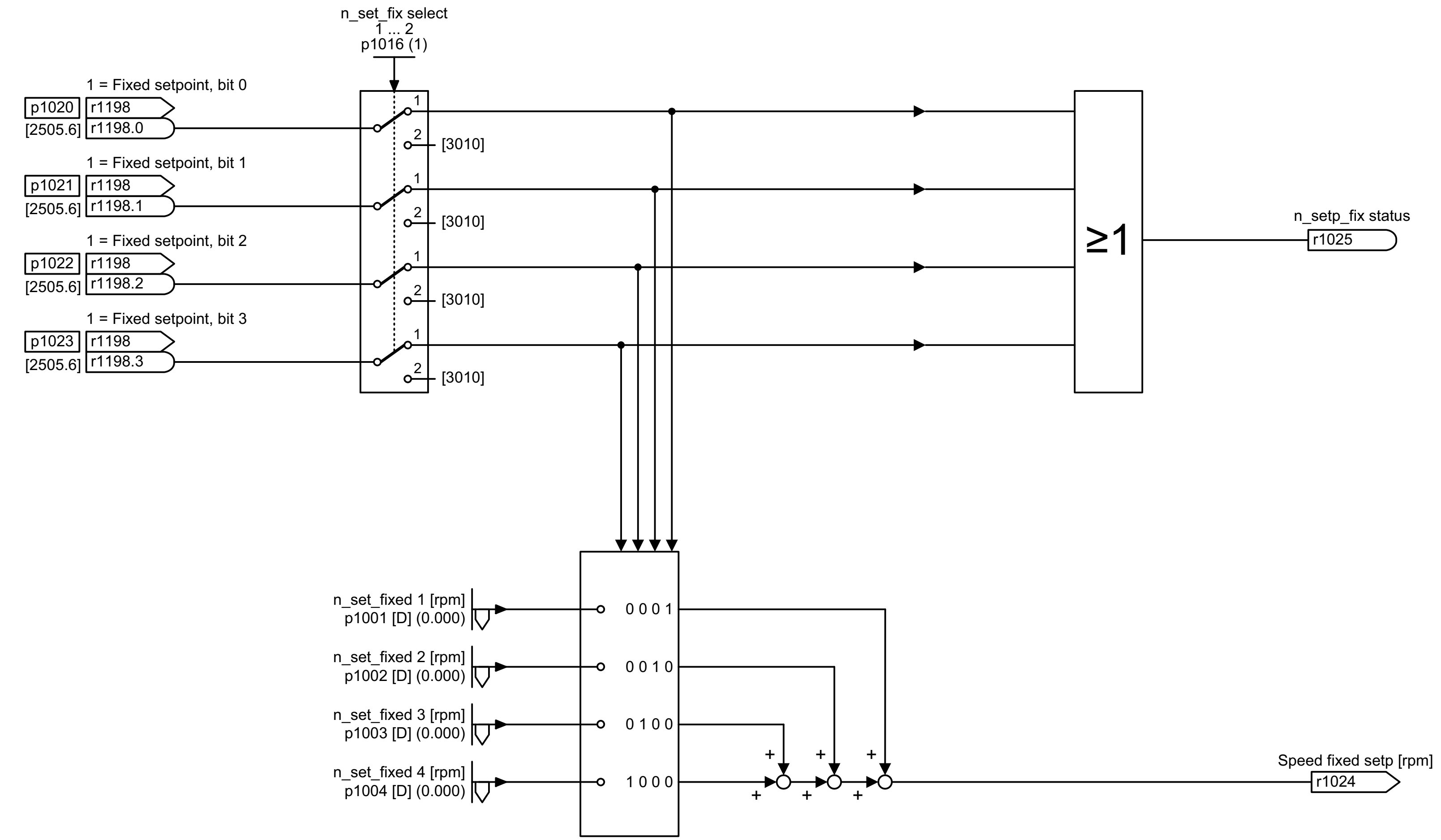


Fig. 3-63 3010 – Fixed speed setpoints, binary selection (p1016 = 2)

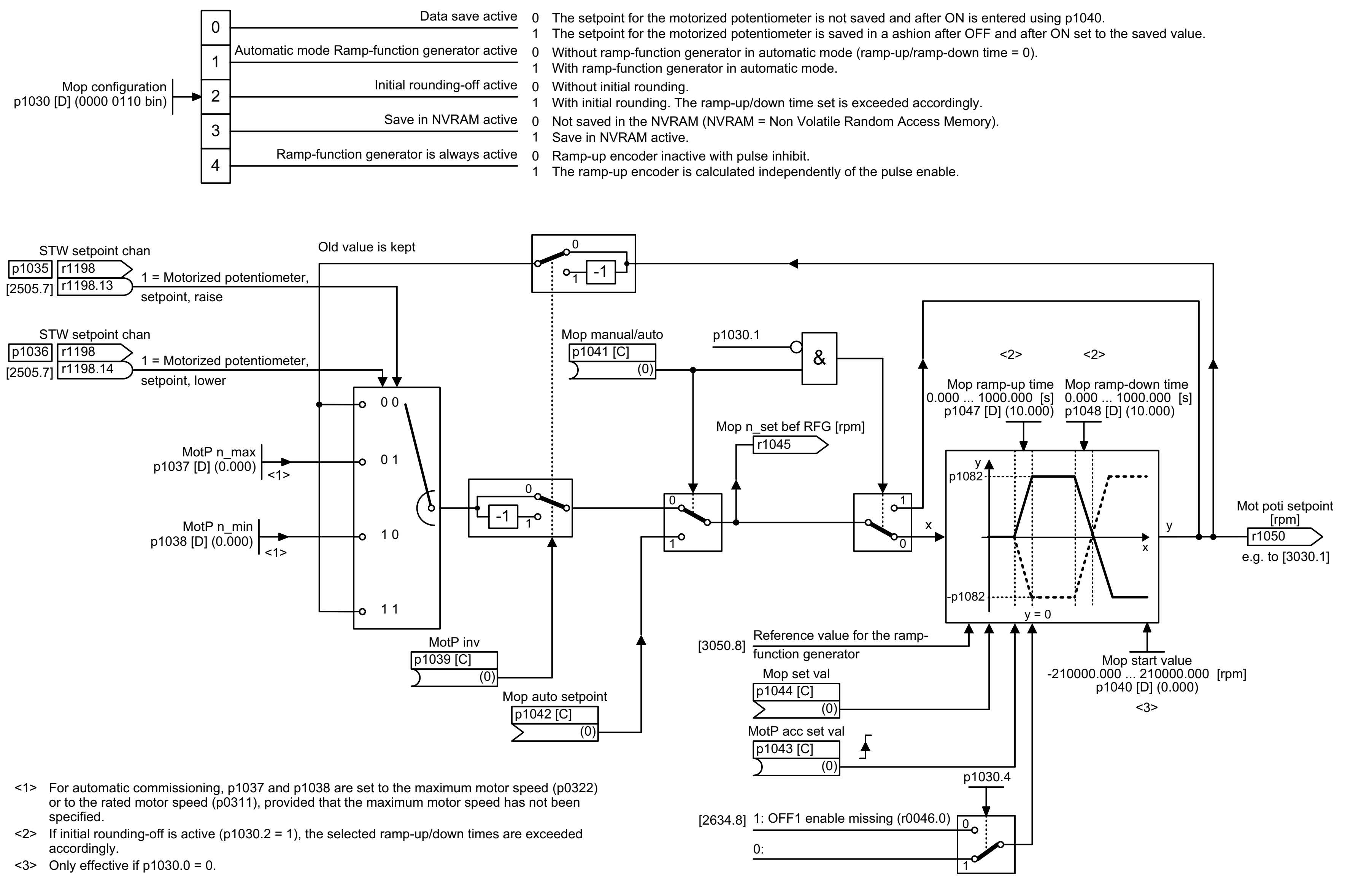
1	2	3	4	5	6	7	8
Setpoint channel					fp_3010_97_51.vsd	Function diagram	- 3010 -
Fixed speed setpoints, binary selection (p1016 = 2)					13.03.2018 V4.7_10	G120 CU230P-2	



1	2	3	4	5	6	7	8
Setpoint channel					fp_3011_97_51.vsd	Function diagram	- 3011 -
Fixed speed setpoints, direct selection (p1016 = 1)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-64 3011 – Fixed speed setpoints, direct selection (p1016 = 1)

Fig. 3-65 3020 – Motorized potentiometer

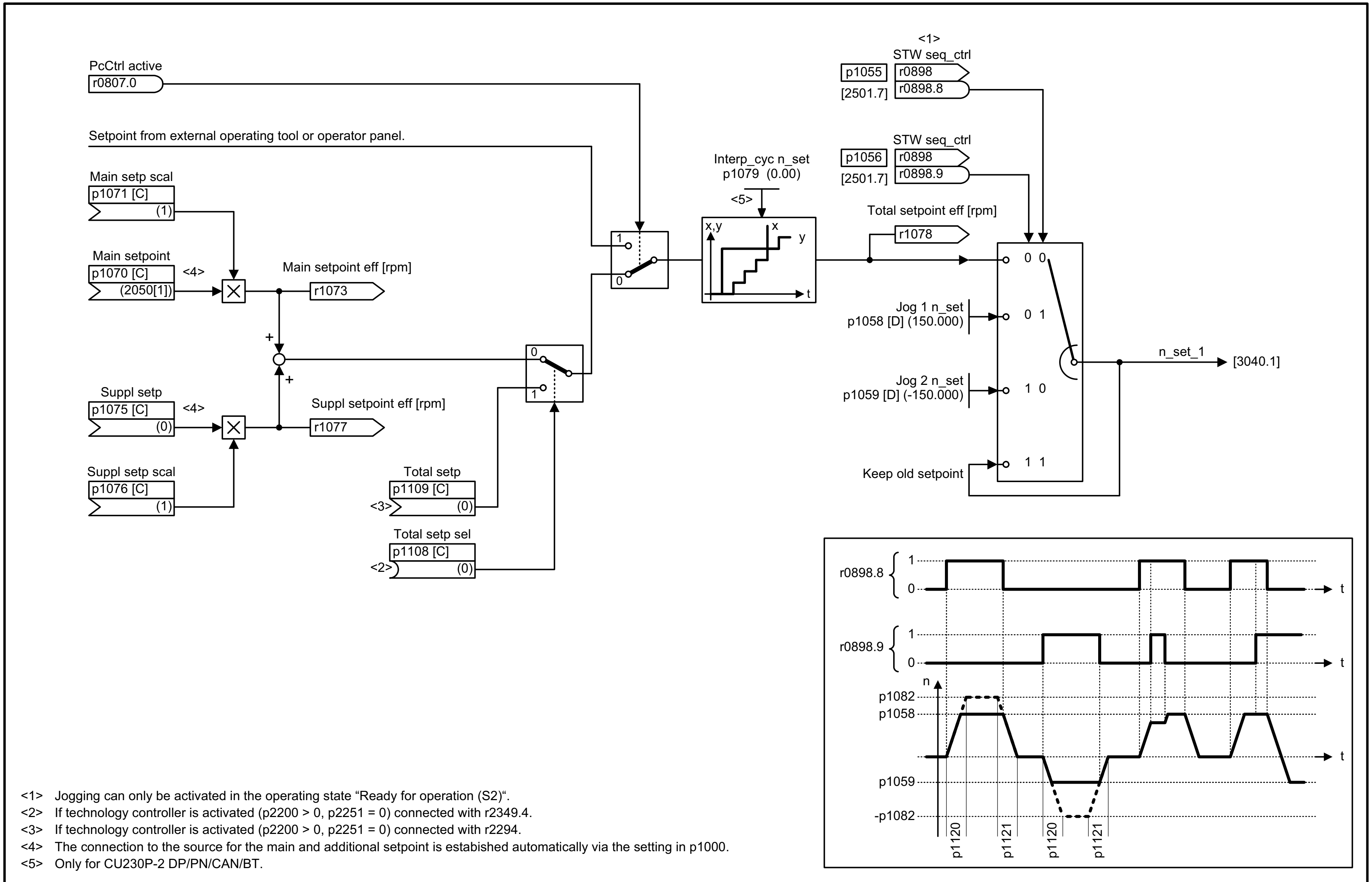


<1> For automatic commissioning, p1037 and p1038 are set to the maximum motor speed (p0322) or to the rated motor speed (p0311), provided that the maximum motor speed has not been specified.

<2> If initial rounding-off is active (p1030.2 = 1), the selected ramp-up/down times are exceeded accordingly.

<3> Only effective if p1030.0 = 0.

1	2	3	4	5	6	7	8
Setpoint channel					fp_3020_97_51.vsd	Function diagram	- 3020 -
Motorized potentiometer					13.03.2018 V4.7_10	G120 CU230P-2	



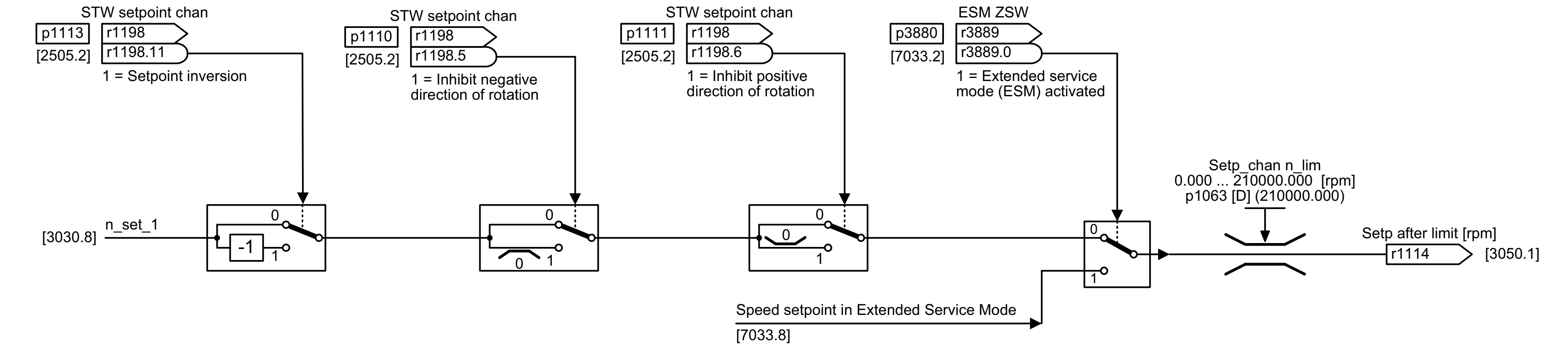
<1> Jogging can only be activated in the operating state “Ready for operation (S2)“.
<2> If technology controller is activated (p2200 > 0, p2251 = 0) connected with r2349.4.
<3> If technology controller is activated (p2200 > 0, p2251 = 0) connected with r2294.
<4> The connection to the source for the main and additional setpoint is estabished automatically via the setting in p1000.
<5> Only for CU230P-2 DP/PN/CAN/BT.

1	2	3	4	5	6	7	8

Setpoint channel	fp_3030_97_59.vsd	Function diagram	- 3030 -
Main/supplementary setpoint, setpoint scaling, jogging	13.03.2018 V4.7_10	G120 CU230P-2	

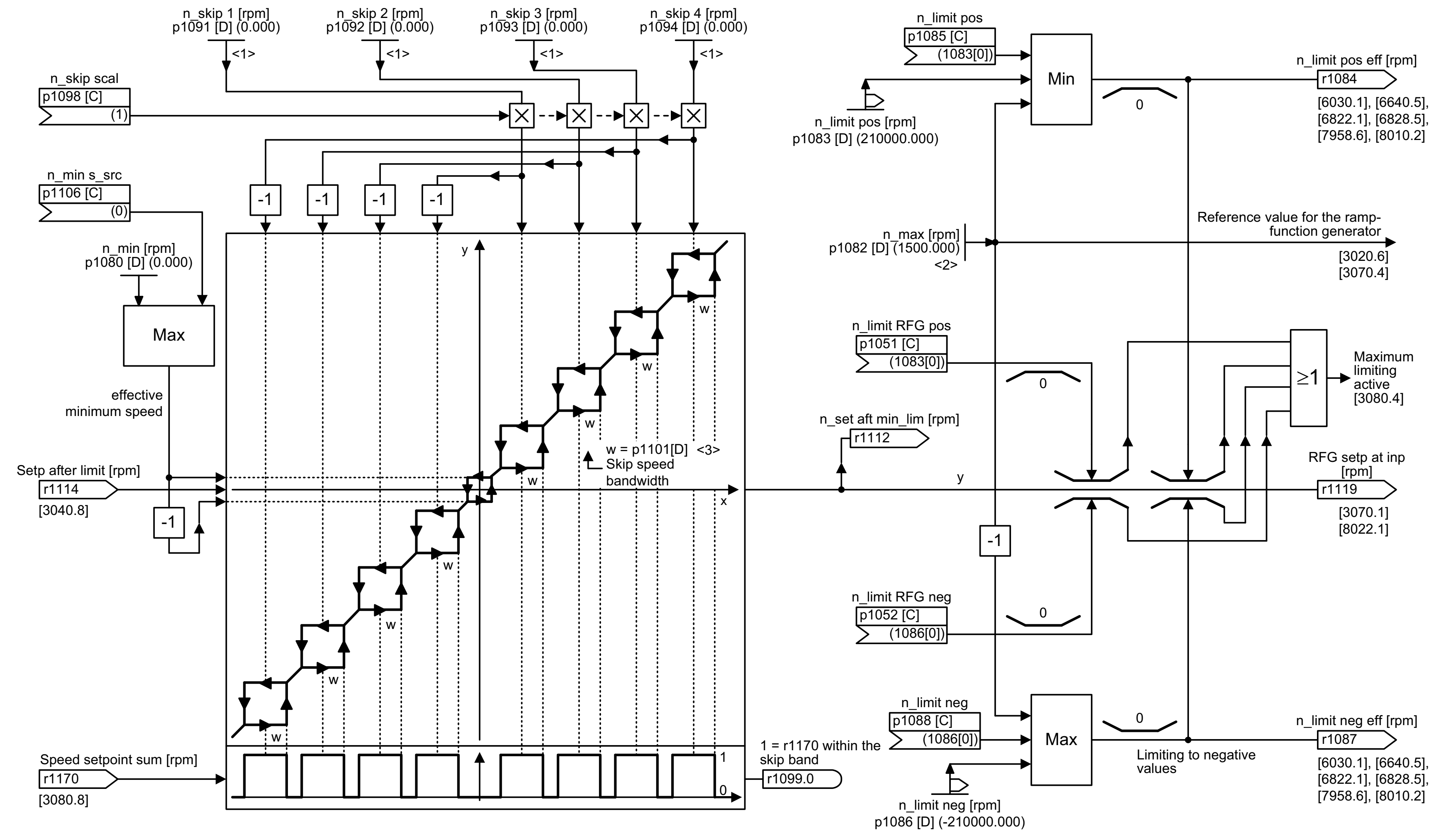
Fig. 3-66 3030 – Main/supplementary setpoint, setpoint scaling, jogging

Fig. 3-67 3040 – Direction limitation and direction reversal



1	2	3	4	5	6	7	8

Setpoint channel	fp_3040_97_01.vsd	Function diagram	- 3040 -
Direction limitation and direction reversal	13.03.2018 V4.7_10	G120 CU230P-2	



<1> A skip speed of "0" deactivates the skip band.
<2> Value of p1082 is limited to maximum motor speed (p0322).
<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	- 3050 -
Skip frequency bands and speed limitations	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-68 3050 – Skip frequency bands and speed limitations

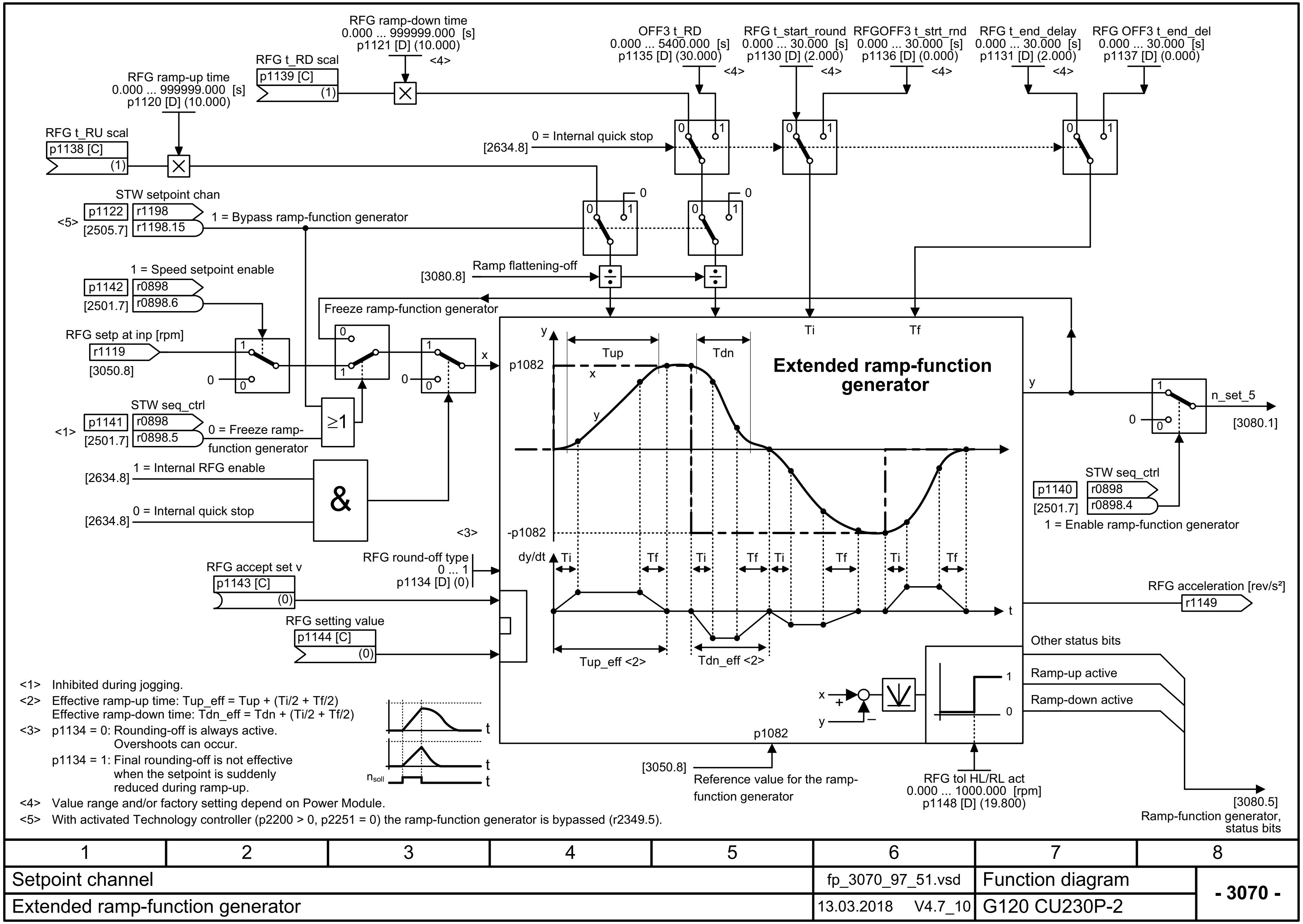
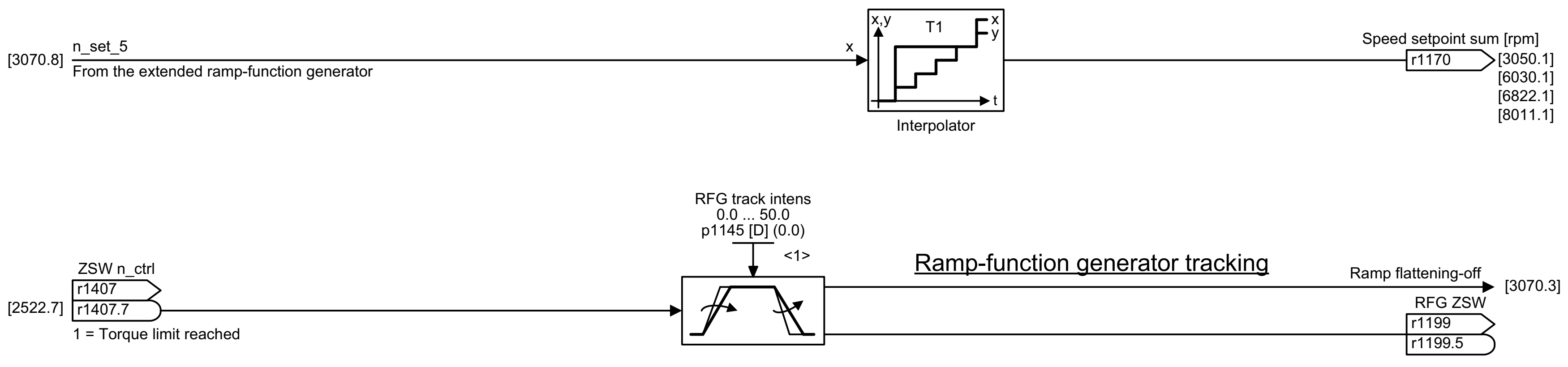
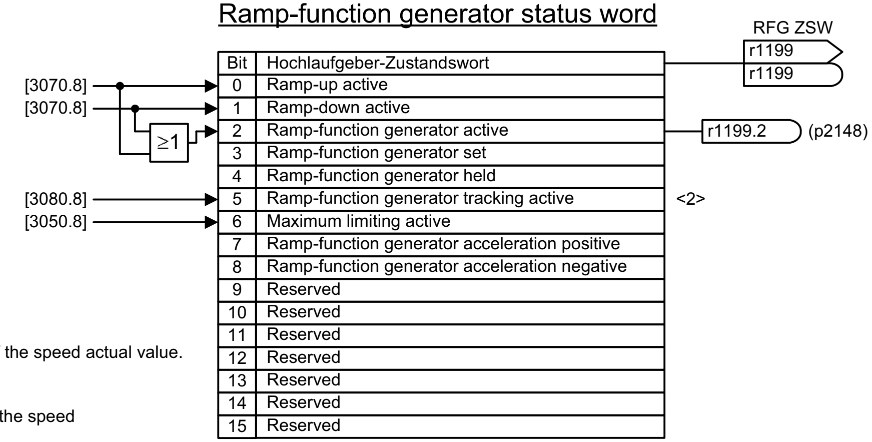


Fig. 3-69 3070 – Extended ramp-function generator

Ramp-function generator selection



Ramp-function generator status word



Bit	Hochlaufgeber-Zustandswort
0	Ramp-up active
1	Ramp-down active
2	Ramp-function generator active
3	Ramp-function generator set
4	Ramp-function generator held
5	Ramp-function generator tracking active
6	Maximum limiting active
7	Ramp-function generator acceleration positive
8	Ramp-function generator acceleration negative
9	Reserved
10	Reserved
11	Reserved
12	Reserved
13	Reserved
14	Reserved
15	Reserved

<1> Behavior of the response ramp of the torque limiting:
p1145 = 0.0: No ramp-function generator tracking. The ramp-function generator ramp is no longer in the range of the speed actual value.
p1145 = 1.0: The ramp-function generator ramp remains as close as possible to the speed actual value.
p1145 > 1.0: The ramp-function generator ramp is steeper than for p1145 = 1.0 (higher "speed following error").

<2> For p1145 > 0, ramp-function generator tracking is activated when the torque limiting responds. This means that the speed controller output only exceeds the torque limit by a deviation that can be set via p1145.

1	2	3	4	5	6	7	8

Setpoint channel	fp_3080_97_01.vsd	Function diagram	- 3080 -
Ramp-function generator selection, status word, tracking	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-70 3080 – Ramp-function generator selection, status word, tracking

3.10 Vector control / U/f control

Function diagrams

Fig. 3-71 6019 – Application classes (p0096), overview

	Possible application classes (p0096) <1>			
	For induction motor (p0300 = 1xx)	**For synchronous motor (p0300 = 2xx)**	**For reluctance synchronous motor (p0300 = 6xx)**	**Applicable function diagrams:**
Power Module PM240 PM240-2	p0096 = 0	p0096 = 0	p0096 = 0	Chapter "Vector control / U/f control"
	p0096 = 1	Not available.	Not available.	Chapter "U/f-control, Standard Drive Control (p0096 = 1)" + [6799]
	p0096 = 2	p0096 = 2	p0096 = 2	Chapter "Vector control, Dynamic Drive Control (p0096 = 2)" + [6490], [6491], [6799]
Power Module PM330	p0096 = 0	p0096 = 0	Not available.	Chapter "Vector control / U/f control"
	p0096 = 2	p0096 = 2	Not available.	Chapter "Vector control, Dynamic Drive Control (p0096 = 2)"
other Power Module	No application class (p0096) possible.			Chapter "Vector control / U/f control"

<1> p0096 = 0: Expert
p0096 = 1: Standard Drive Control (SDC)
p0096 = 2: Dynamic Drive Control (DDC)

1	2	3	4	5	6	7	8

Vector control / U/f control	fp_6019_97_52.vsd	Function diagram	- 6019 -
Application classes (p0096), overview	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-72 6020 – Speed control and generation of the torque limits, overview

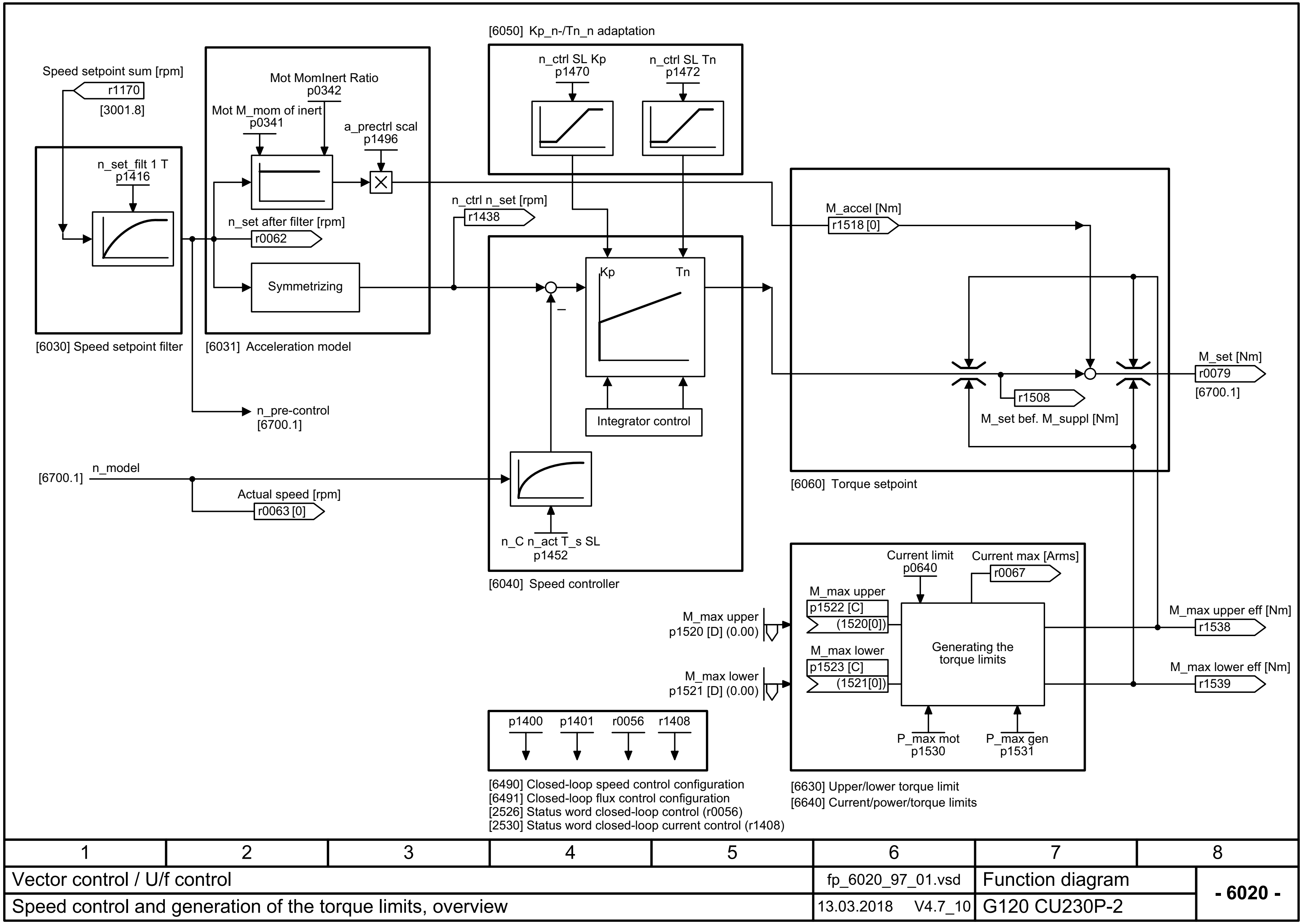
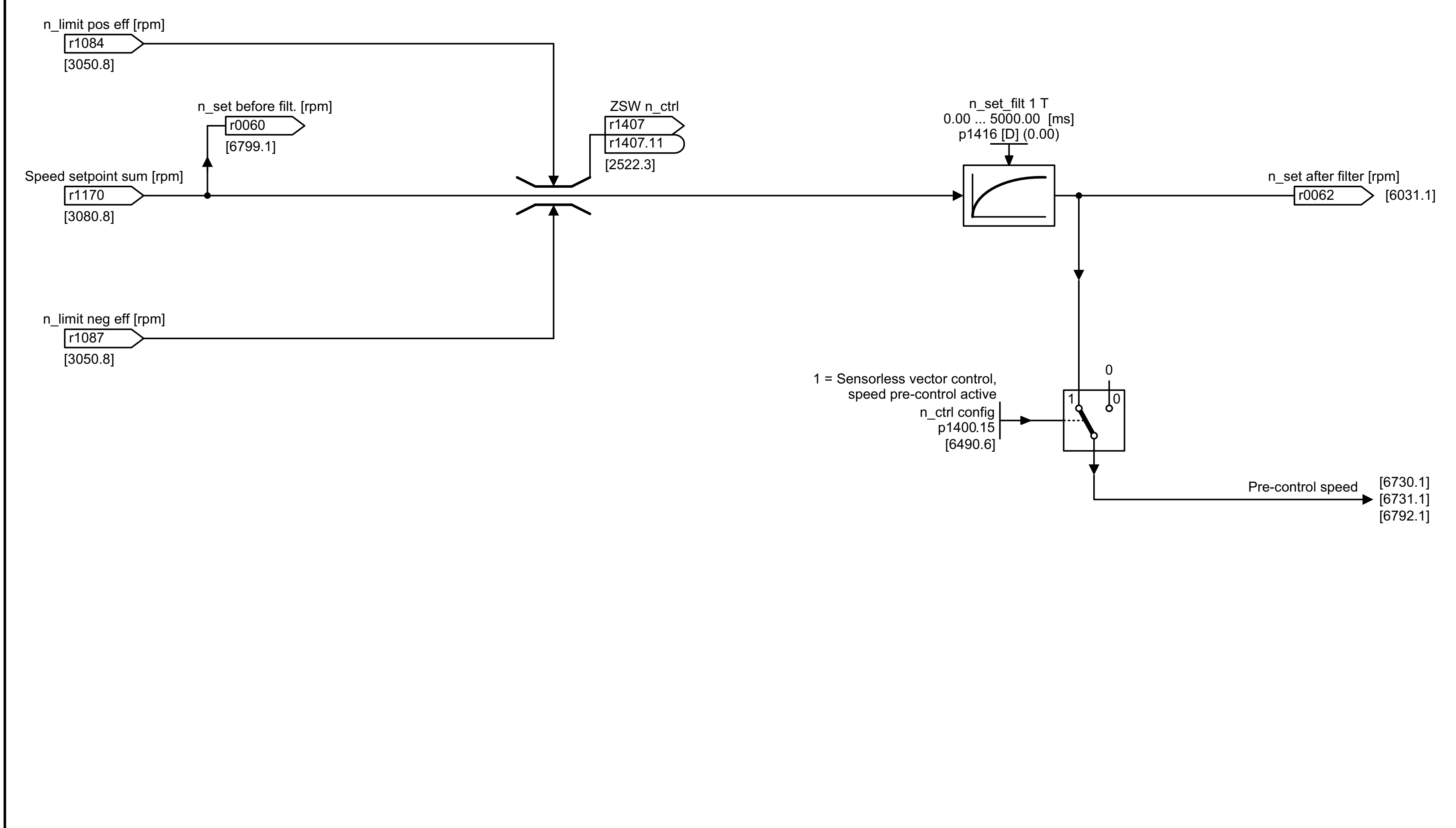


Fig. 3-73 6030 – Speed setpoint



1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6030_97_01.vsd	Function diagram	- 6030 -
Speed setpoint					13.03.2018 V4.7_10	G120 CU230P-2	

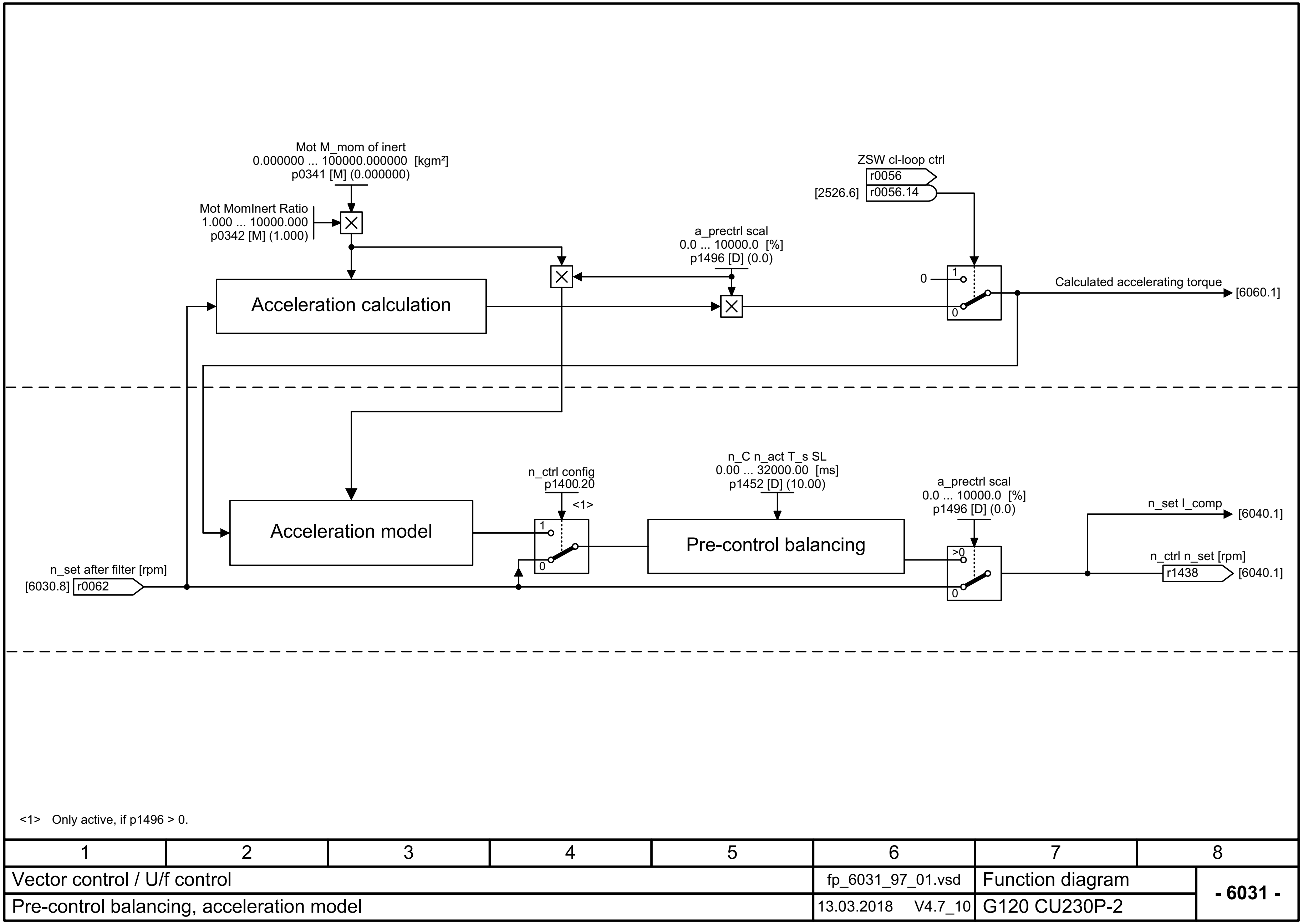
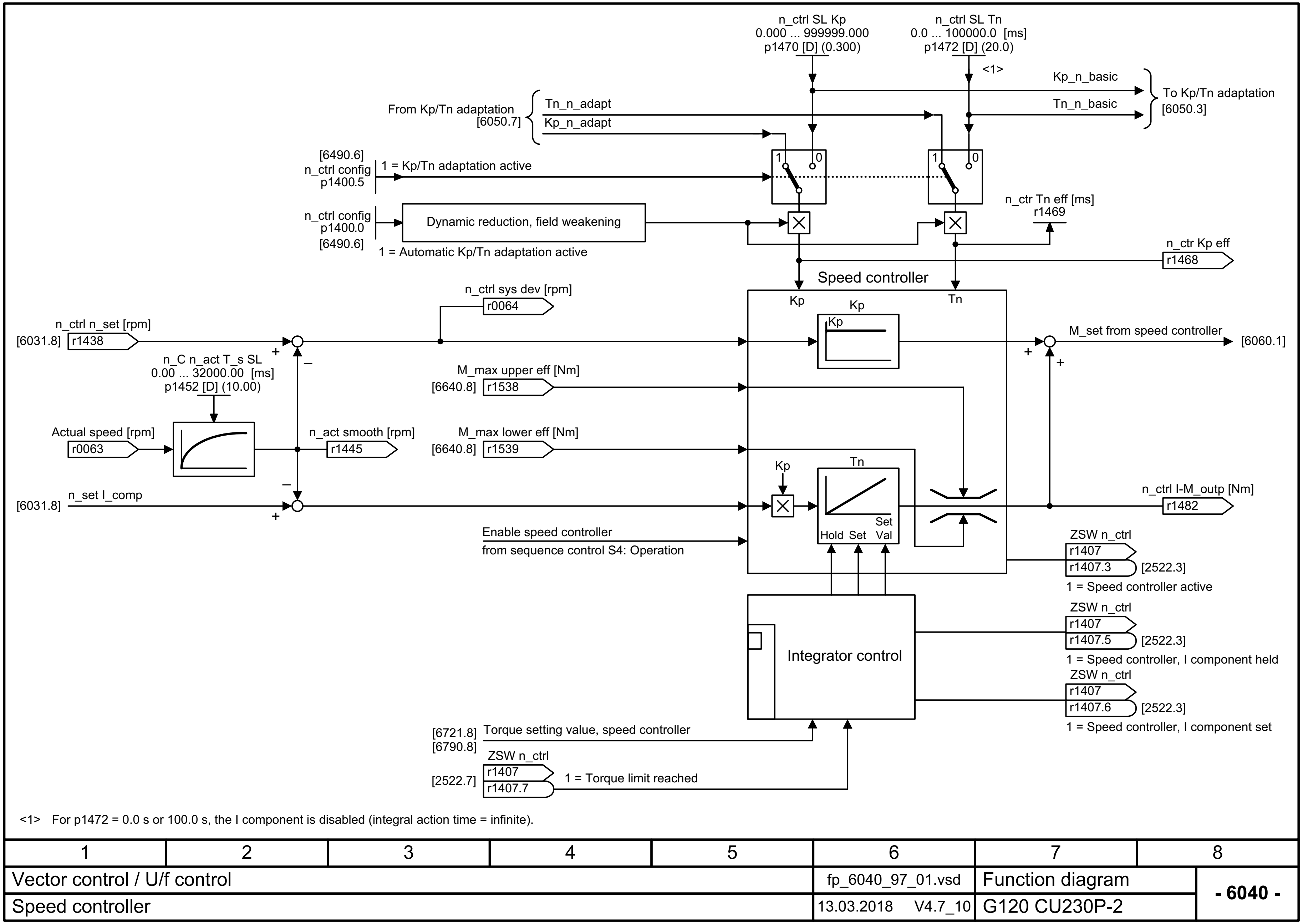
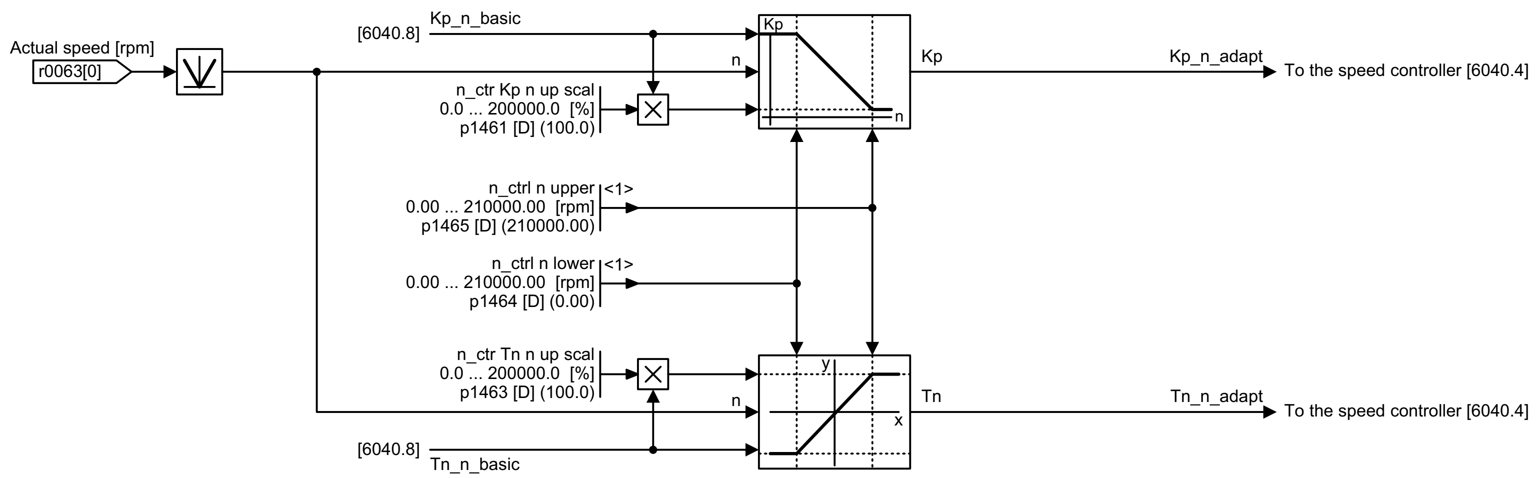


Fig. 3-74 6031 – Precontrol balancing, acceleration model

Fig. 3-75 6040 – Speed controller



Speed-dependent Kp_n/Tn_n adaptation

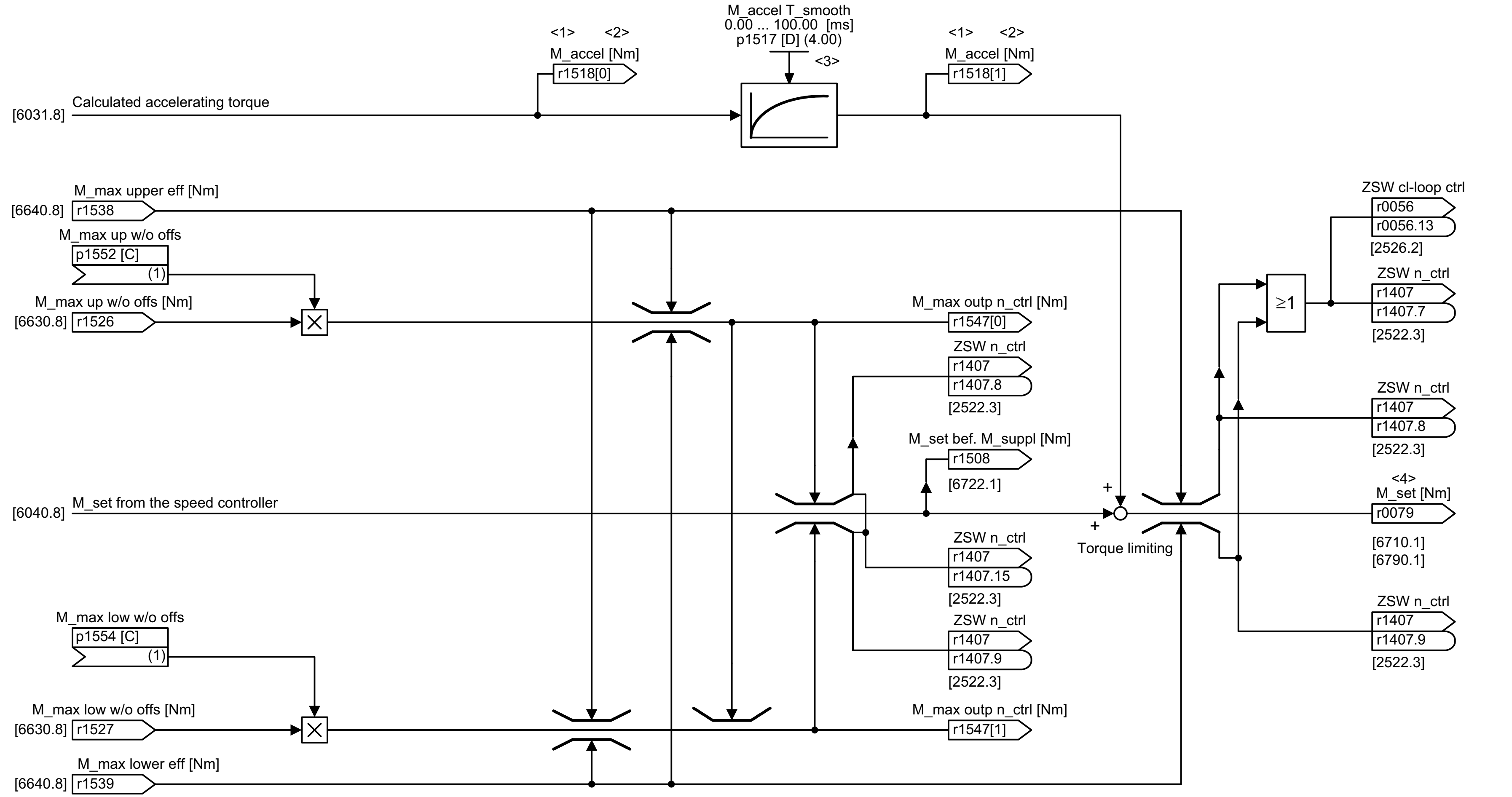


<1> If the lower transition point exceeds the upper transition point, the Kp-adaptation also changes over.

1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6050_97_01.vsd	Function diagram	- 6050 -
Kp_n/Tn_n adaptation					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-76 6050 – Kp_n-/Tn_n adaptation

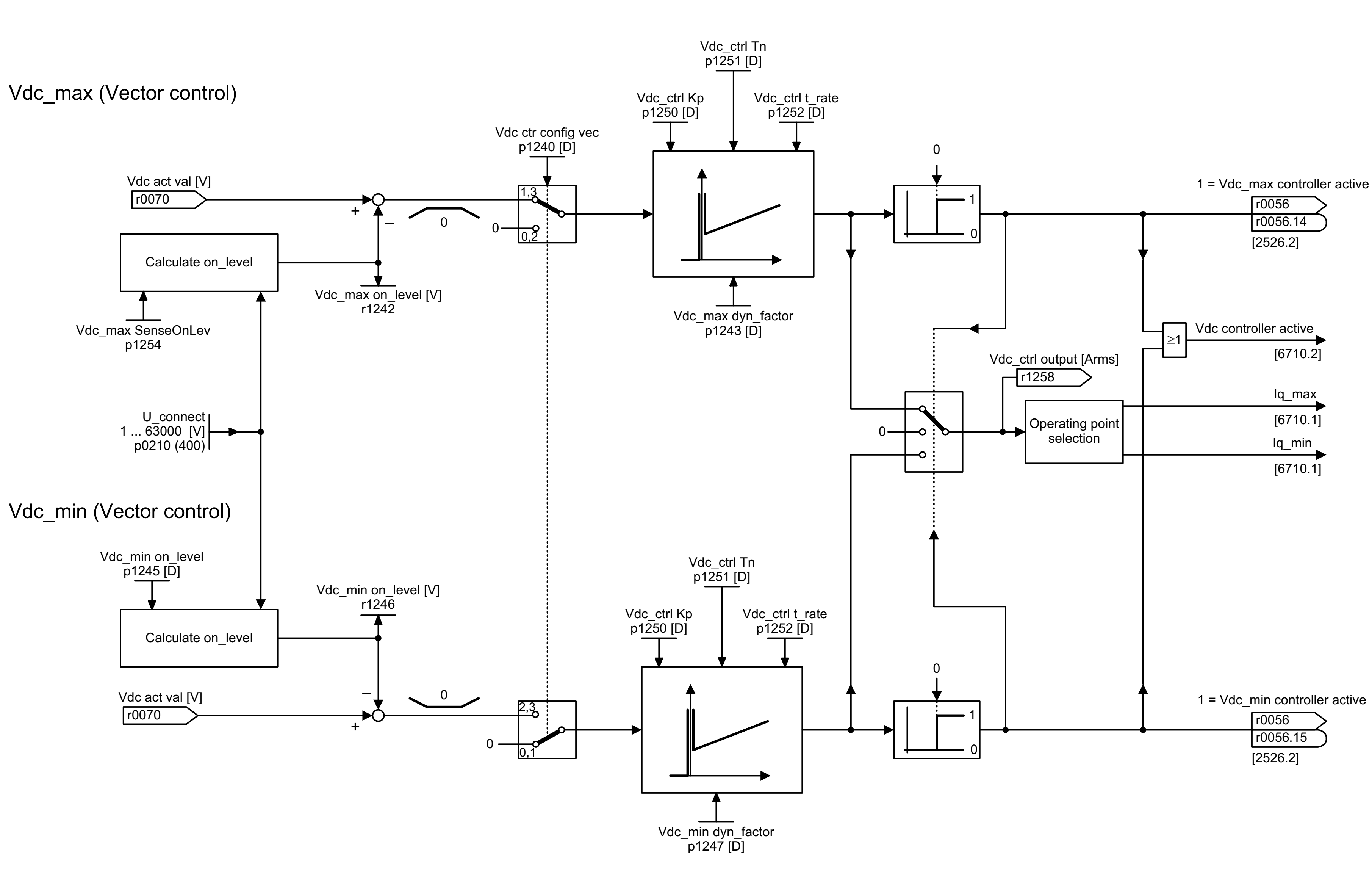
Fig. 3-77 6060 – Torque setpoint



<1> The signal is only effective after magnetization has been completed (r0056.4 = 1).
<2> No pre-control if the Vdc controller is active [6220.8].
<3> Acceleration control is inhibited for p1517 = 100 ms.
<4> M_set is also influenced by the speed limit controller.

1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6060_97_01.vsd	Function diagram	- 6060 -
Torque setpoint					13.03.2018 V4.7_10	G120 CU230P-2	

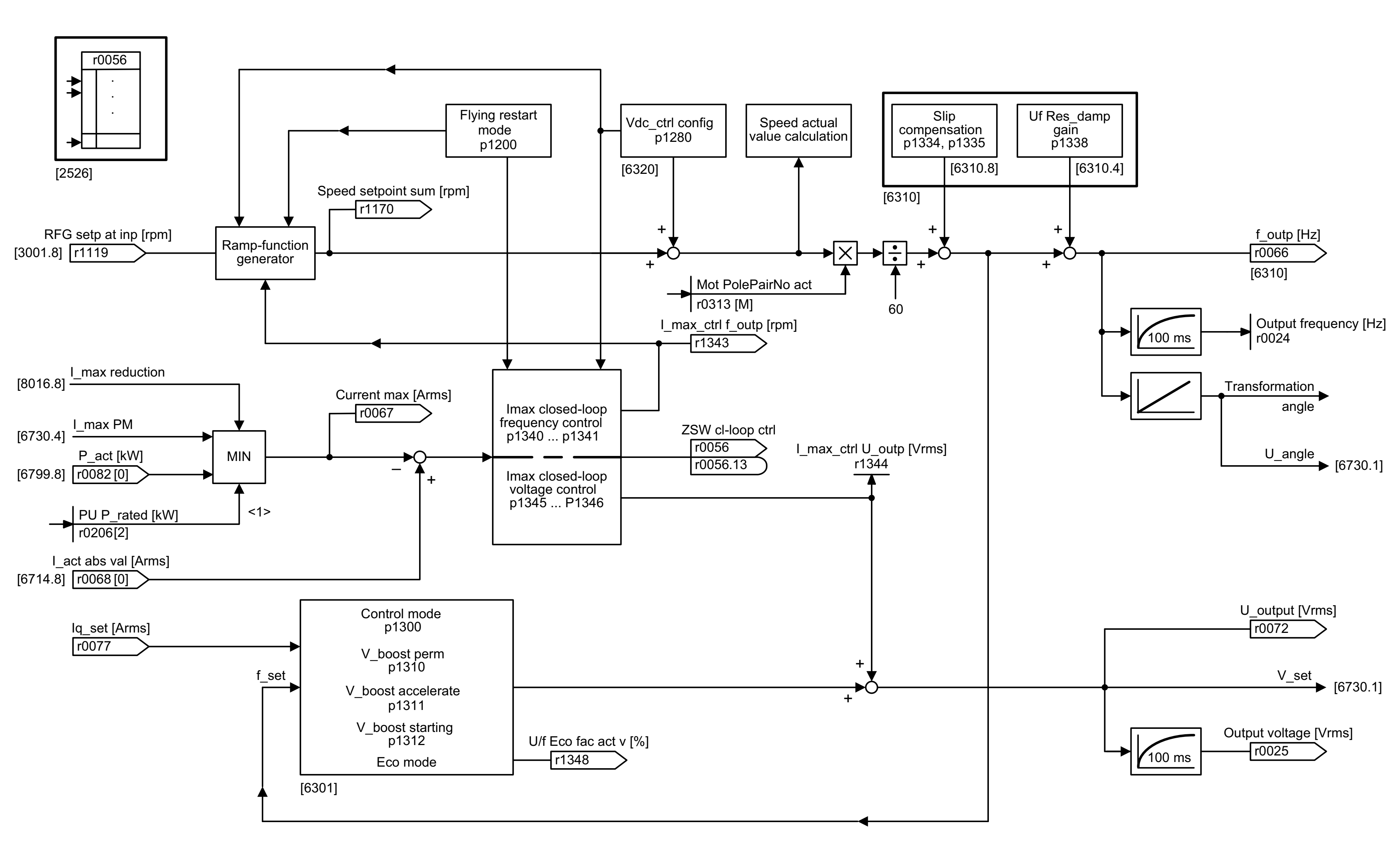
Fig. 3-78 6220 – Vdc_max controller and Vdc_min controller (PM230/PM240/PM330)



1	2	3	4	5	6	7	8

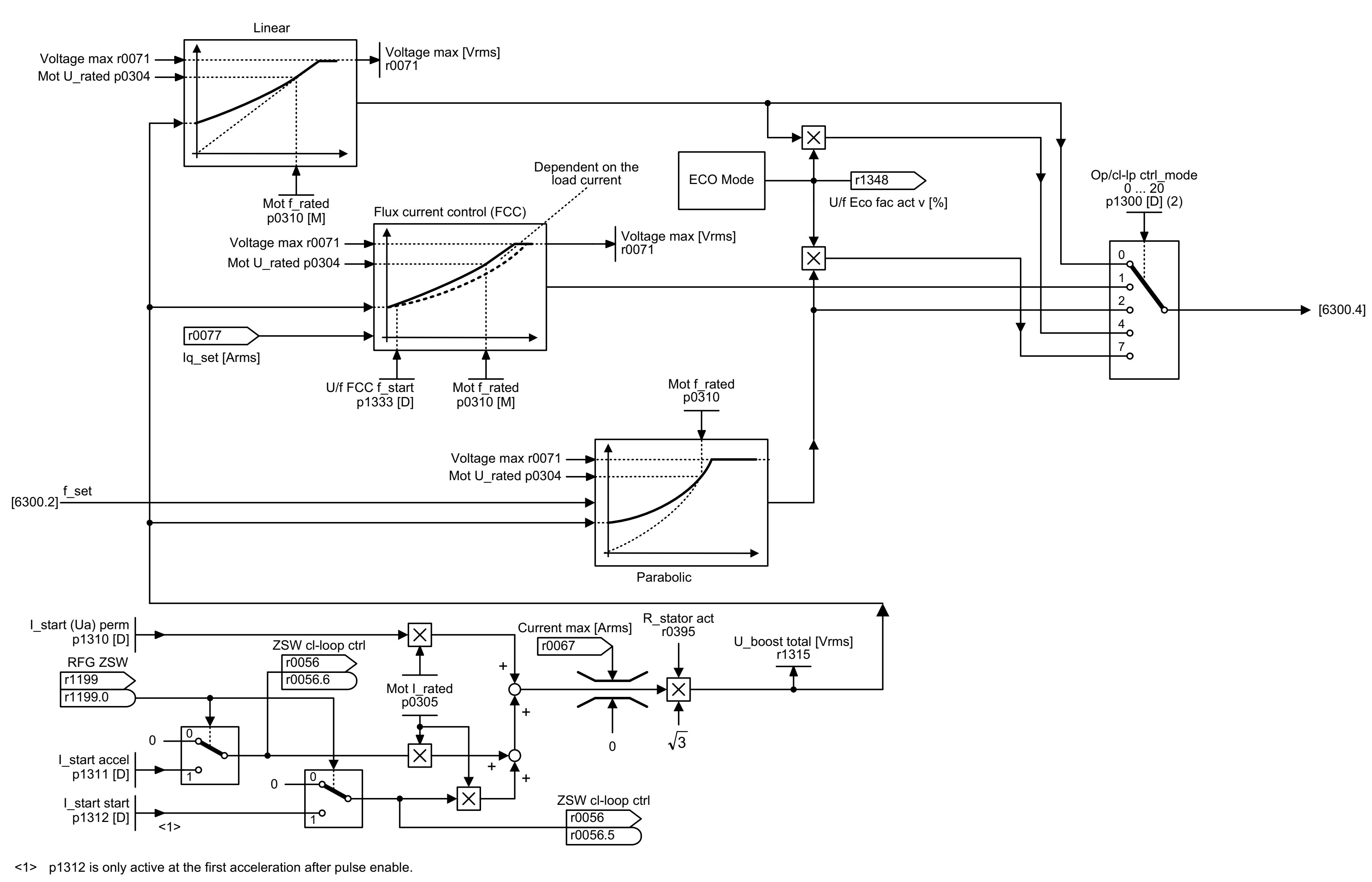
Vector control / U/f control	fp_6220_97_62.vsd	Function diagram	- 6220 -
Vdc_max controller and Vdc_min controller (PM230/PM240/PM330)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-79 6300 – U/f control, overview



<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 / U/f control					fp_6300_97_01.vsd	Function diagram	- 6300 -
U/f control, overview					13.03.2018 V4.7_10	G120 CU230P-2	

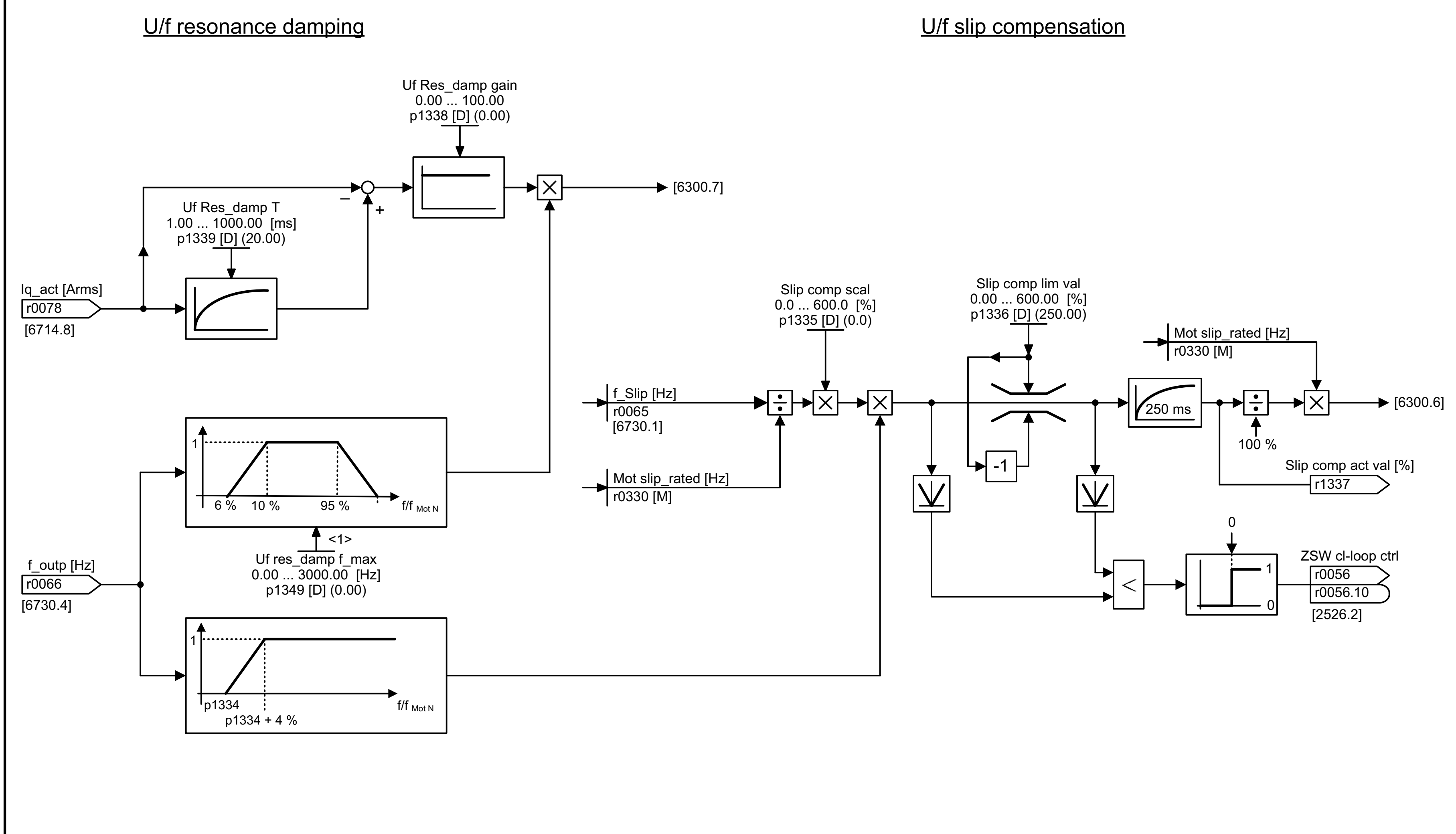


<1> p1312 is only active at the first acceleration after pulse enable.

1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6301_97_01.vsd	Function diagram	- 6301 -
U/f control, characteristic and voltage boost					13.03.2018 V4.7_10	G120 CU230P-2	

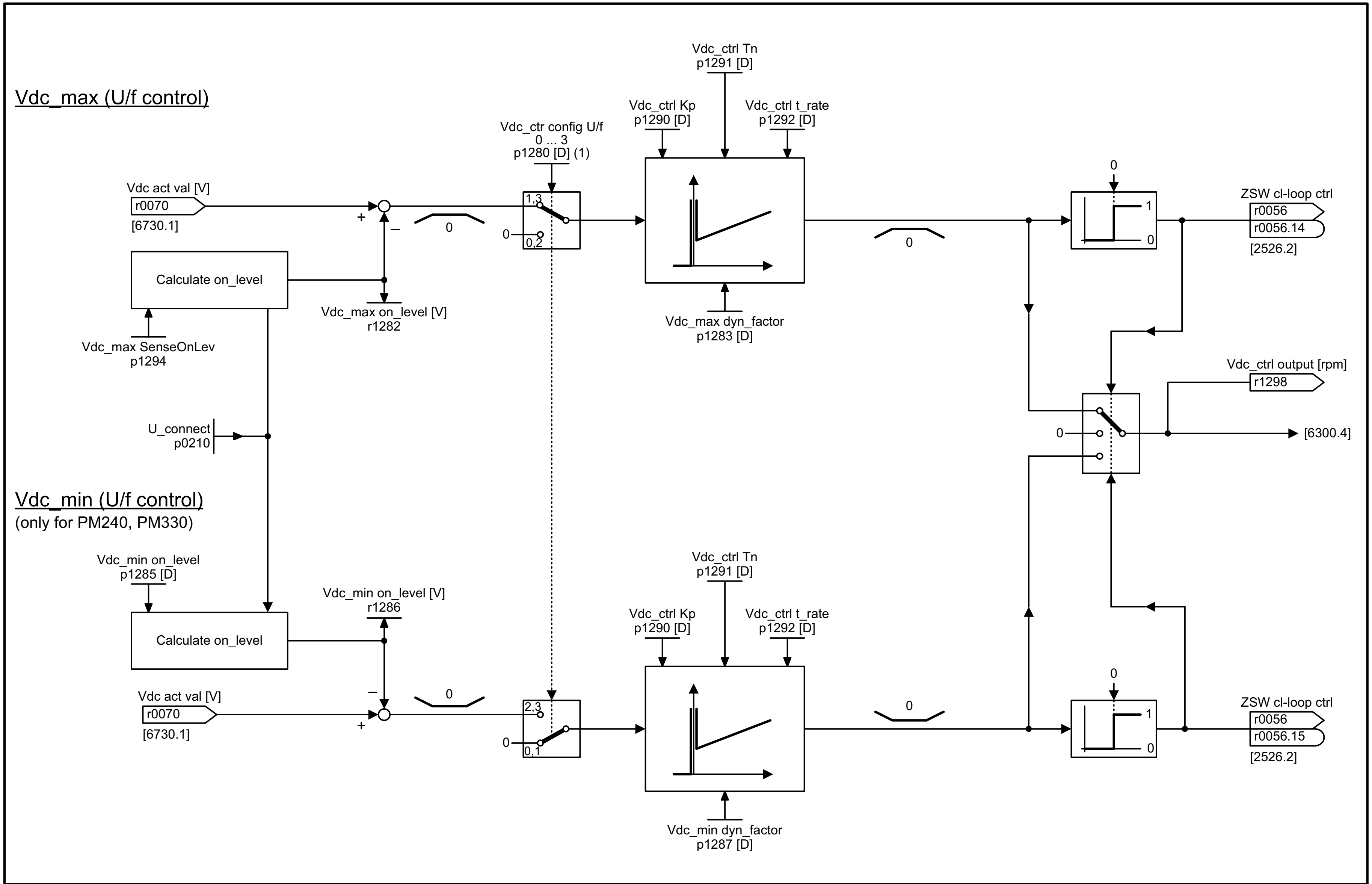
Fig. 3-80 6301 – U/f control, characteristic and voltage boost

Fig. 3-81 6310 – U/f control, resonance damping and slip compensation



<1> If p1349 = 0: the limit is 0.95 · f Mot N ≤ 45 Hz.

1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6310_97_01.vsd	Function diagram	- 6310 -
U/f control, Resonance damping and slip compensation					13.03.2018 V4.7_10	G120 CU230P-2	



1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6320_97_01.vsd	Function diagram	- 6320 -
U/f control, Vdc_max controller and Vdc_min controller (PM230/PM240/PM330)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-82 6320 – U/f control, Vdc_max controller and Vdc_min controller (PM230/PM240/PM330)

Fig. 3-83 6490 – Speed control configuration

n_reg Konfig
p1400[D]
<2>

Speed control configuration

Bit No.	Meaning	
00	1 = Automatic Kp/Tn adaptation active	[6040.3] [6824.3]
...	Reserved	
05	1 = Kp/Tn adaptation active	[6040.3] [6824.3]
...	Reserved	
15	1 = Sensorless vector control, speed pre-control active	[6030.6] [6822.6]
16	1 = I component for limiting enabled	
...	Reserved	
19	1 = Anti-windup for integral component	
20	1 = Acceleration model	[6031.4] [6822.5]
21	1 = Free Tn reduction active <1>	
...	Reserved	
25	1 = Acceleration torque instantaneous in the I/f mode	

<1> Only with Power Module PM330.
<2> Value range and/or factory setting depend on Power Module.

1	2	3	4	5	6	7	8

Vector control / U/f control	fp_6490_97_01.vsd	Function diagram	- 6490 -
Speed control configuration	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-84 6491 – Flux control configuration

Flux ctrl config
p1401 [D]

Flux control, configuration

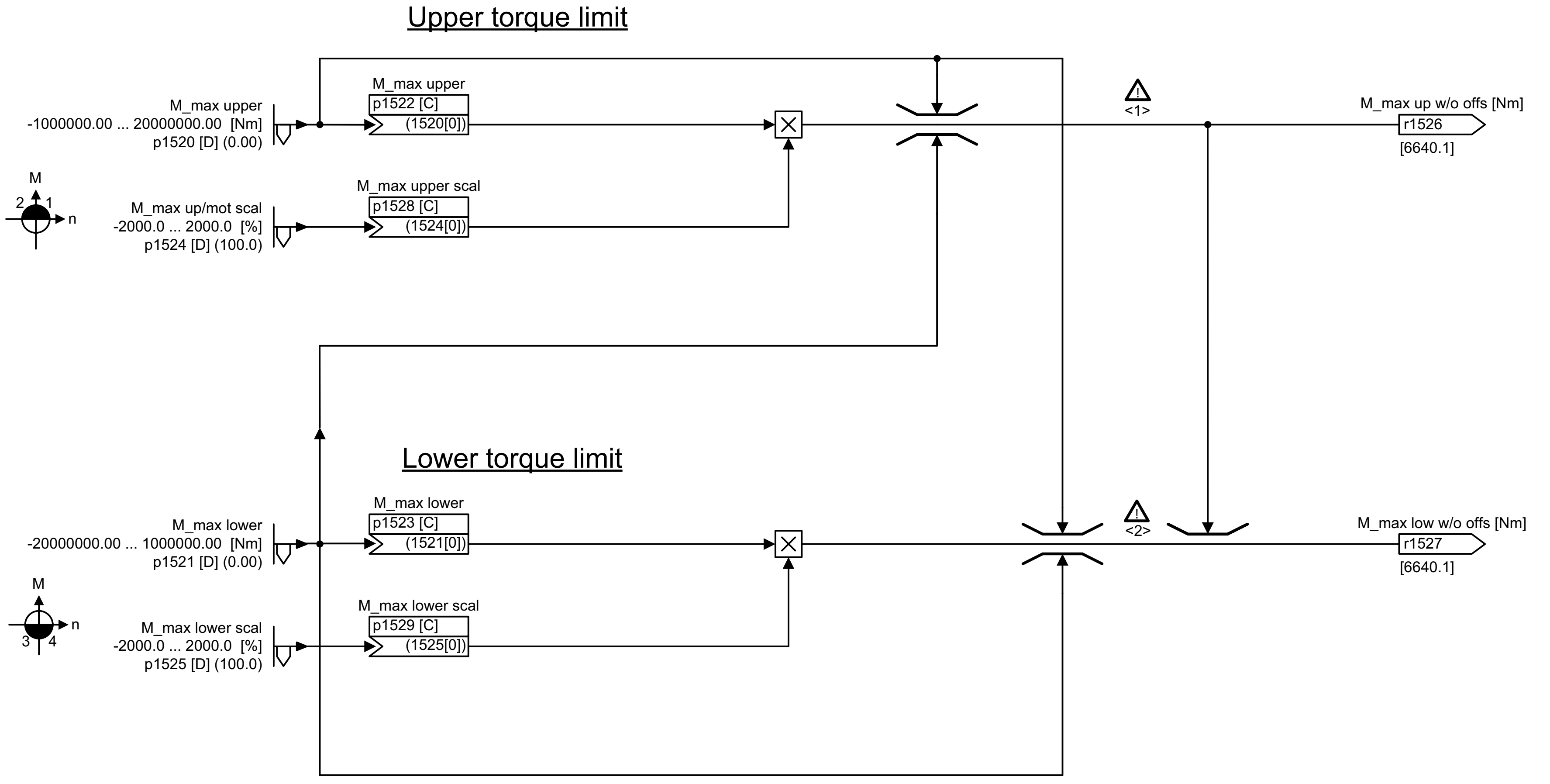
Factory setting

Bit No.	Meaning	•	
00	Reserved	0	
01	1 = Flux setpoint, differentiation active	1	[6723.6]
02	1 = Flux build-up control active	1	[6722.5], [6723.6]
03	1 = Flux characteristic load-dependent	0	[6790.5]
04	Reserved		
05	Reserved		
06	1 = Quick magnetizing active	0	[6722.5]
07	Reserved	0	
08	Reserved		
09	1 = Dynamic flux boost, load dependent	0	[6790.3]
10	1 = Flux boost, low speed	0	[6790.3]
11	Reserved		
12	Reserved		
13	Reserved		
14	1 = Efficiency optimization 2 active	0	[6722.4]
15	Reserved		

1	2	3	4	5	6	7	8

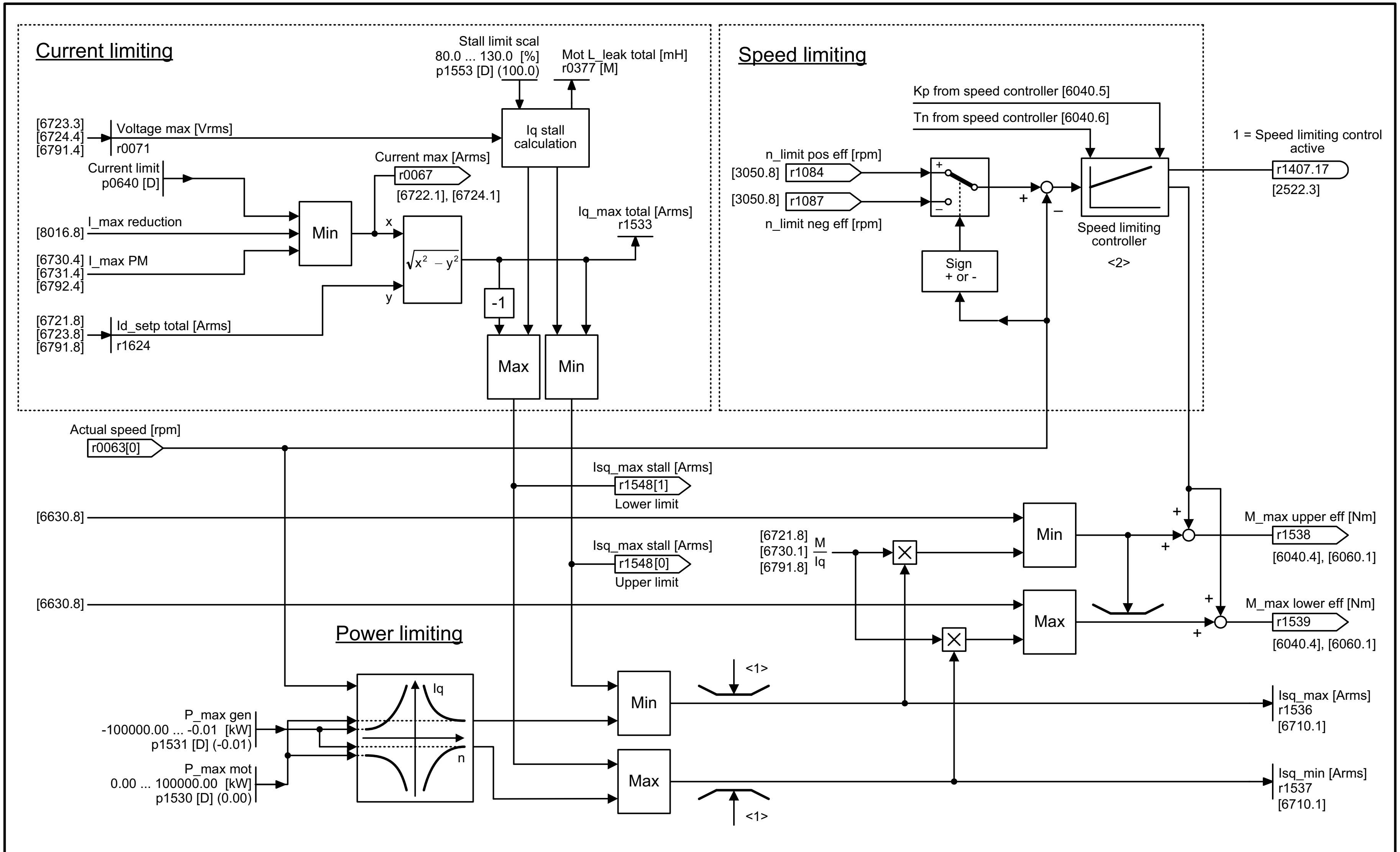
Vector control / U/f control	fp_6491_97_01.vsd	Function diagram	- 6491 -
Flux control configuration	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-85 6630 – Upper/lower torque limit



<1> <2> Danger: Negative values at <1> / positive values at <2> represent a minimum torque for the other torque direction and can cause the motor to accelerate uncontrollably.

1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6630_97_51.vsd	Function diagram	- 6630 -
Upper/lower torque limit					13.03.2018 V4.7_10	G120 CU230P-2	

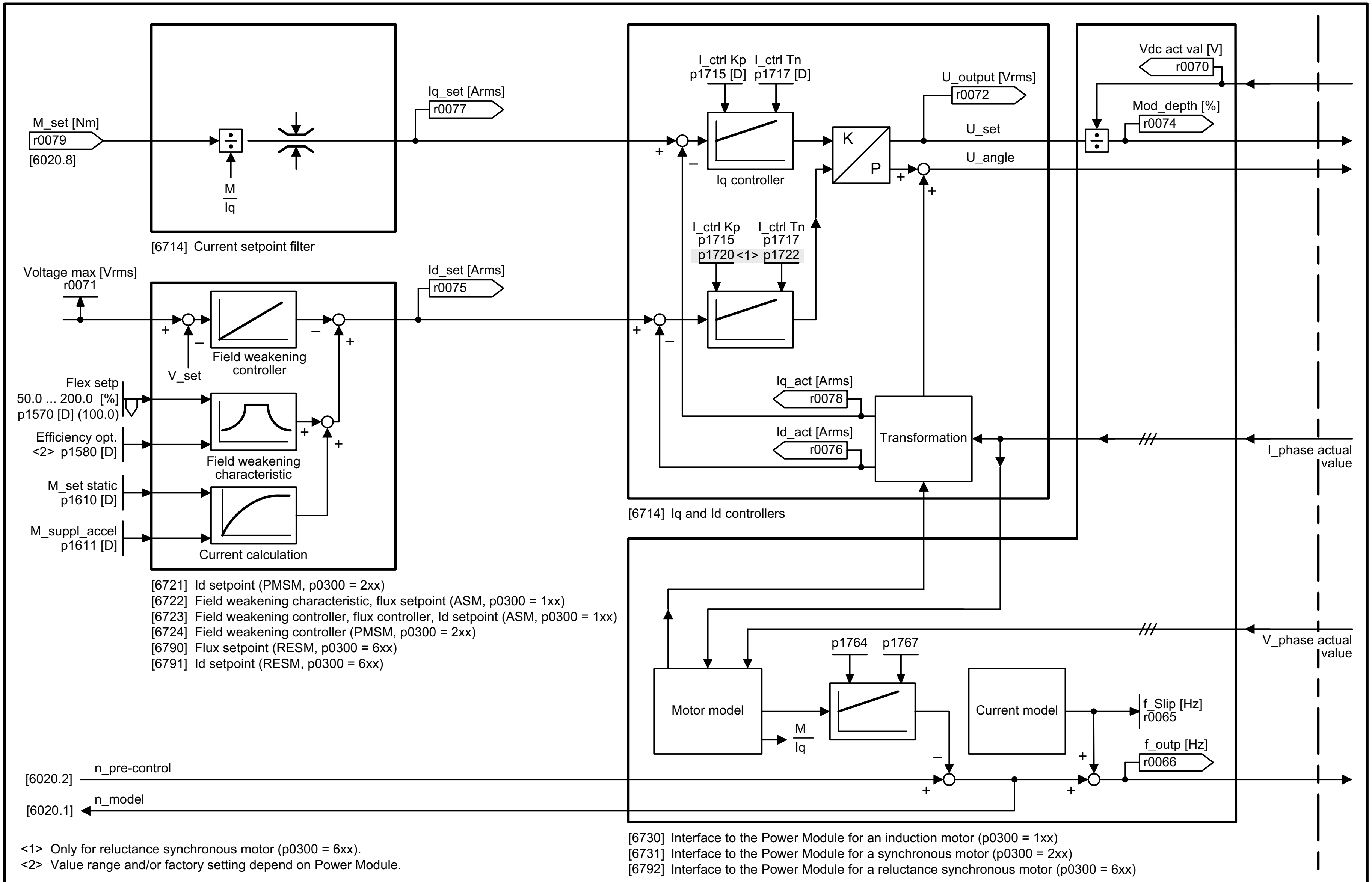


<1> Intervention by the Vdc controller.
<2> Intervention when the speed limit is exceeded + 2 % n_rated.

1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6640_97_01.vsd	Function diagram	- 6640 -
Current/power/torque limits					13.03.2018 V4.7_10	G120 CU230P-2	

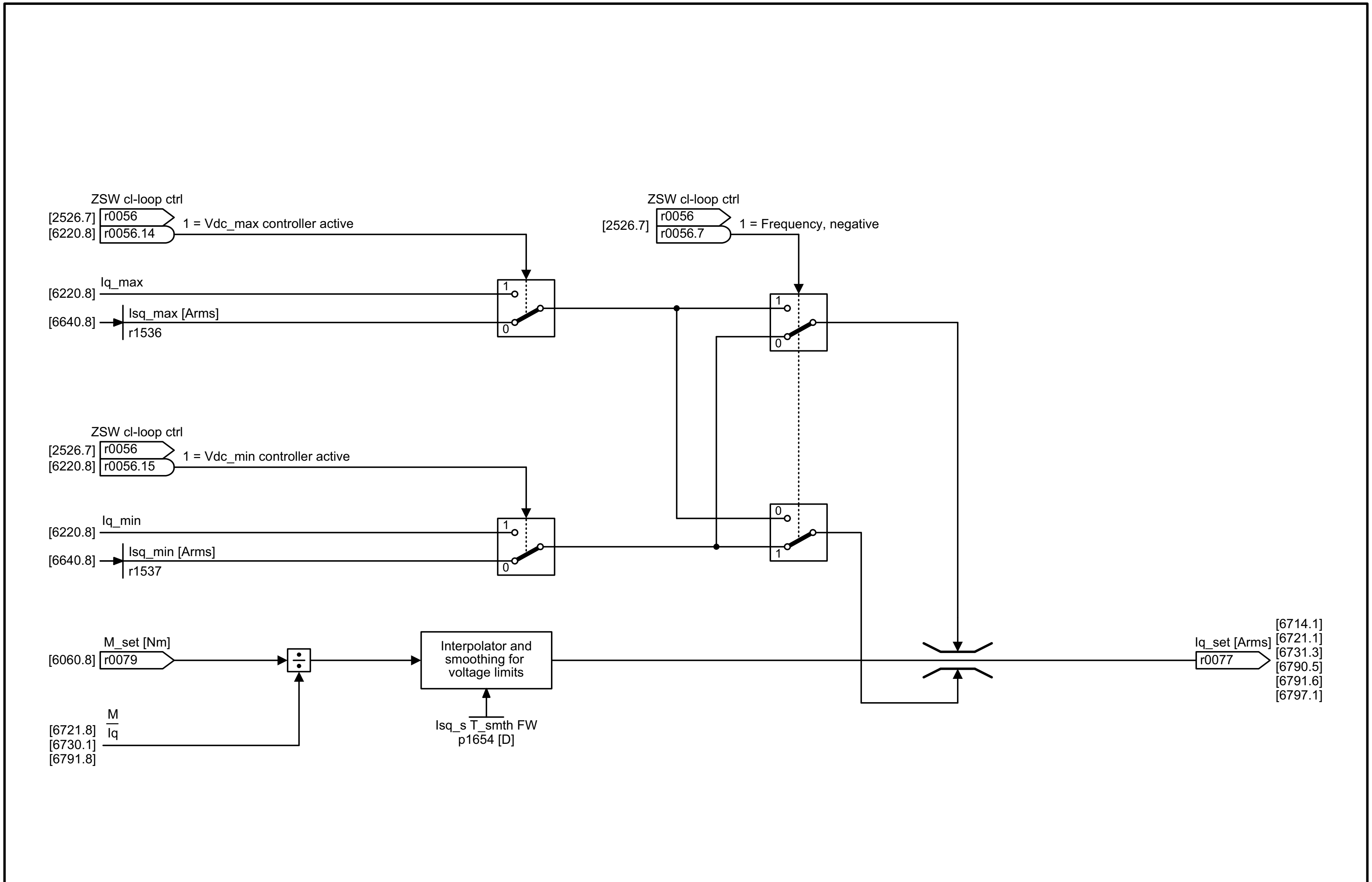
Fig. 3-86 6640 – Current/power/torque limits

Fig. 3-87 6700 – Current control, overview



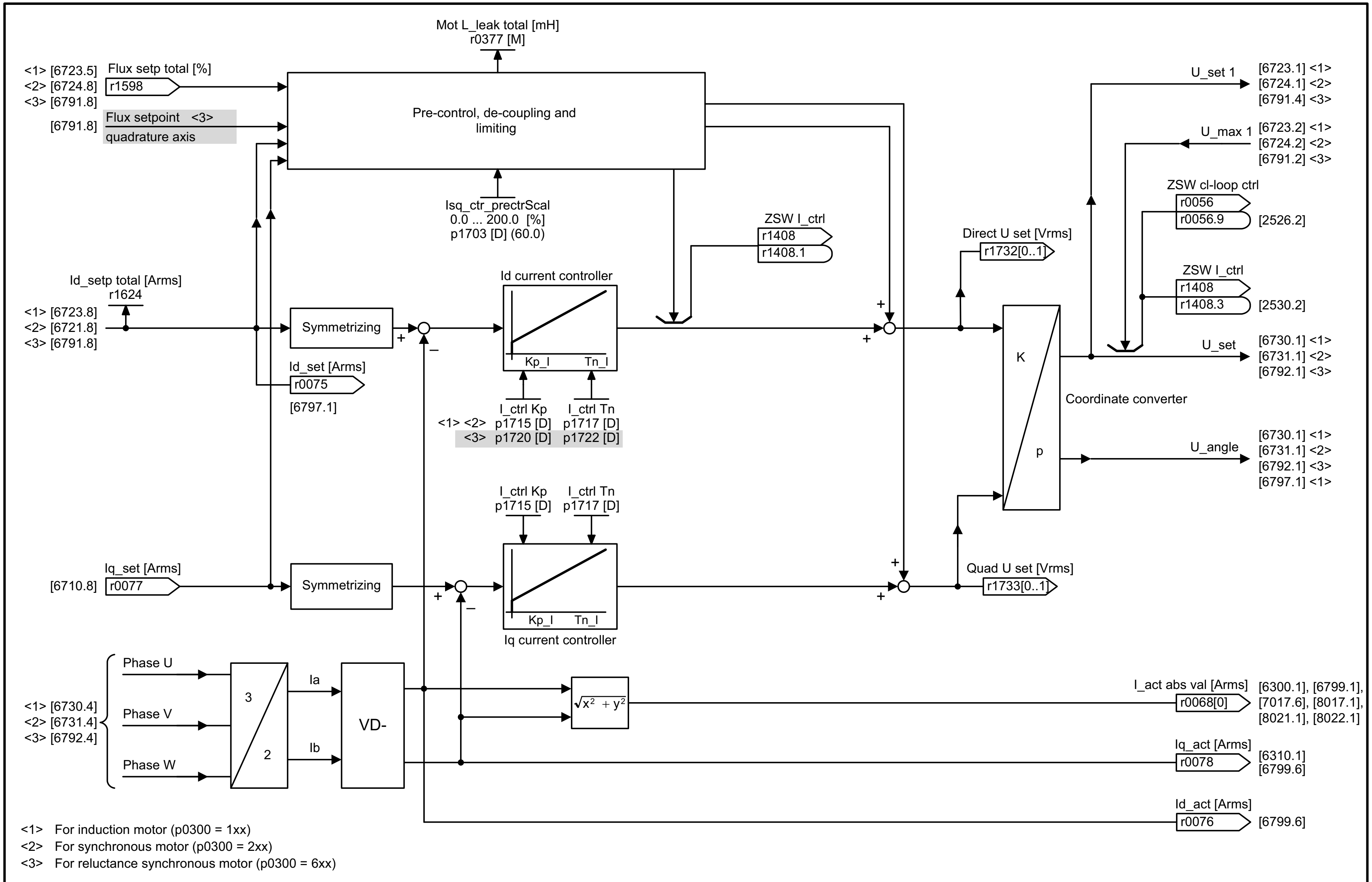
1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6700_97_01.vsd	Function diagram	- 6700 -
Current control, overview					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-88 6710 – Current setpoint filter



1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6710_97_01.vsd	Function diagram	- 6710 -
Current setpoint filter					13.03.2018 V4.7_10	G120 CU230P-2	

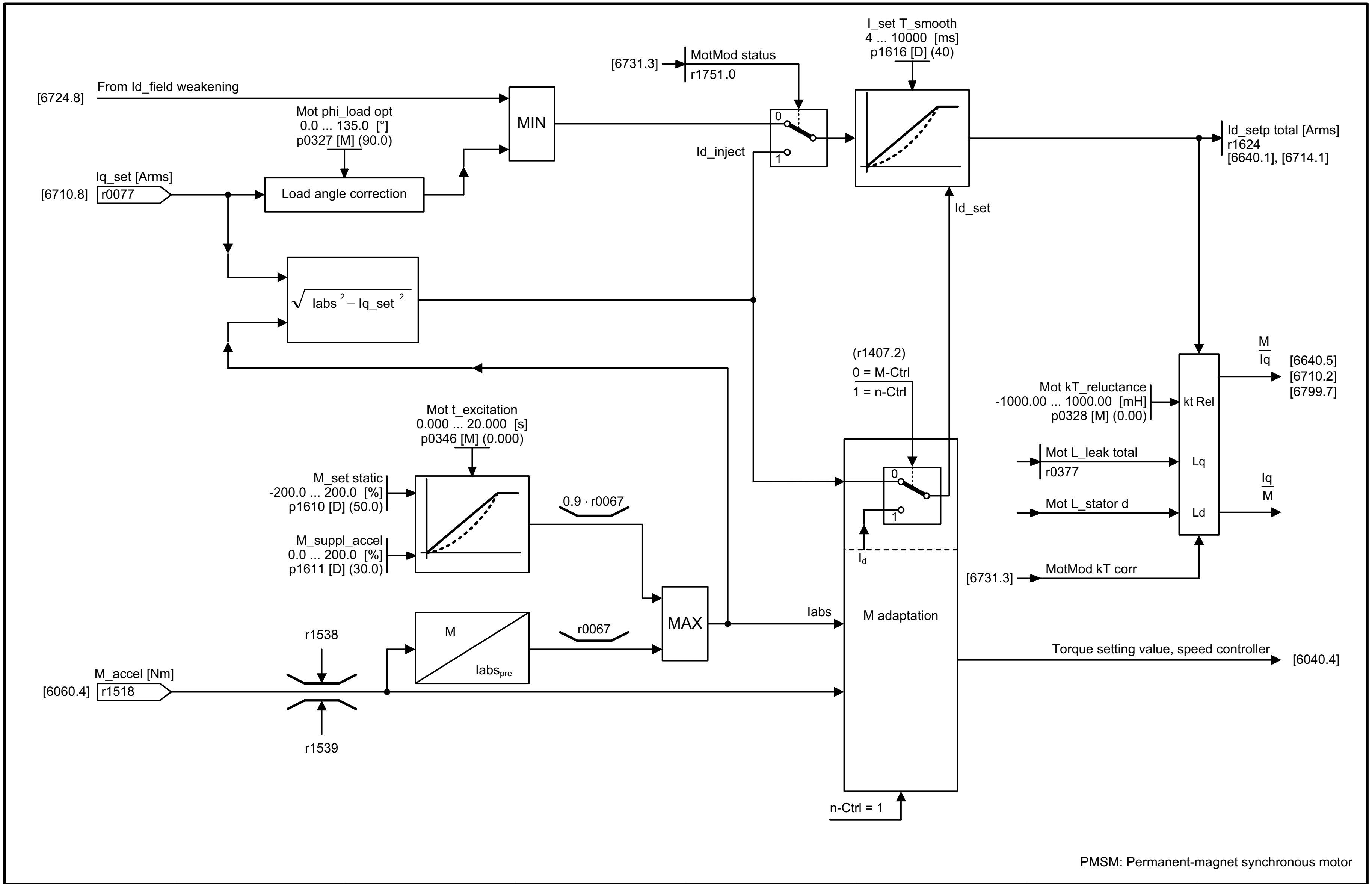
Fig. 3-89 6714 – Iq and Id controllers



1	2	3	4	5	6	7	8

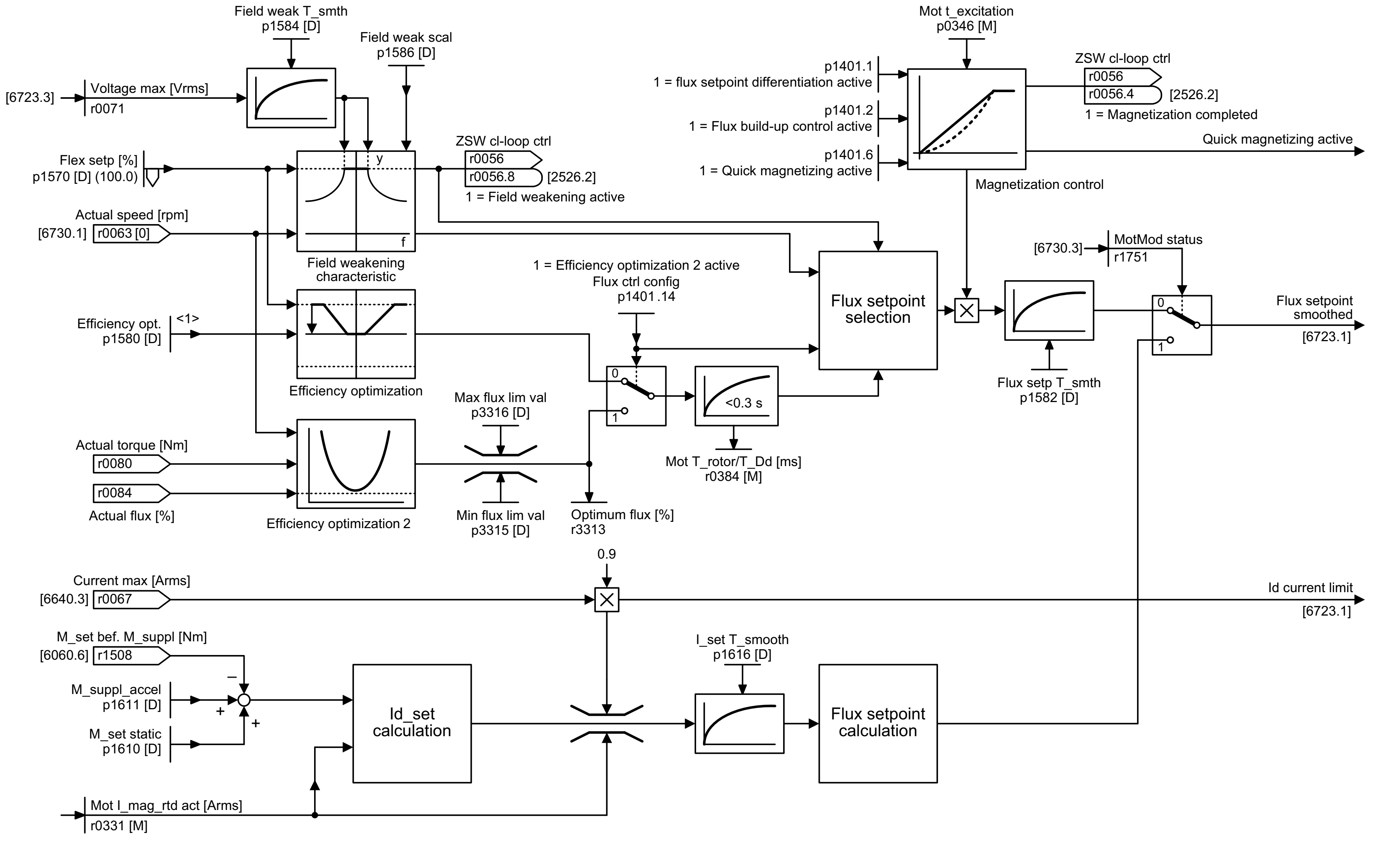
Vector control / U/f control	fp_6714_97_01.vsd	Function diagram	- 6714 -
Iq and Id controllers	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-90 6721 – Id setpoint (PMSM, p0300 = 2xx)



1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6721_97_01.vsd	Function diagram	- 6721 -
Id setpoint (PMSM, p0300 = 2xx)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-91 6722 – Field weakening characteristic, flux setpoint (ASM, p0300 = 1)

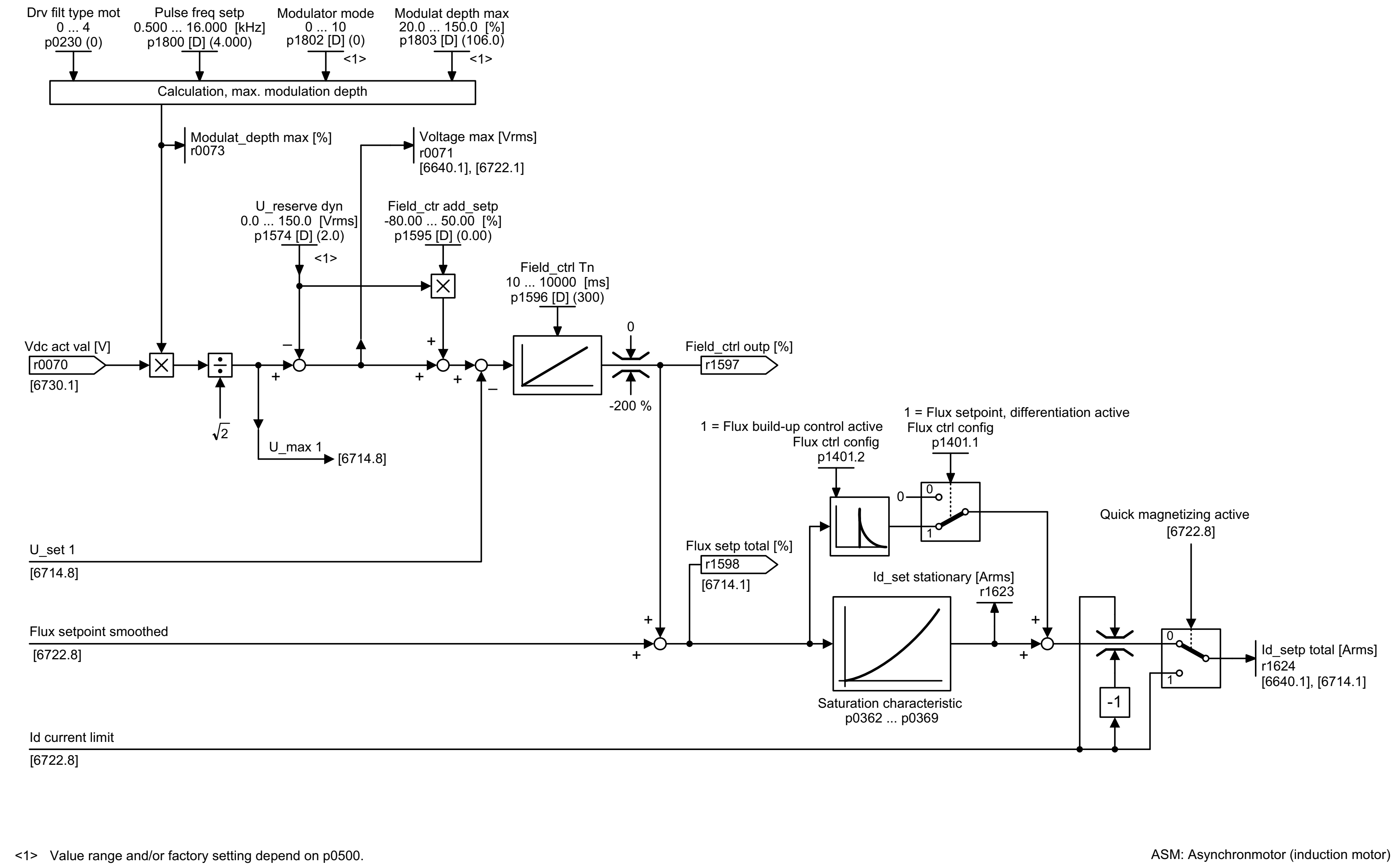


<1> Value range and/or factory setting depend on Power Module.

ASM: Asynchronmotor (induction motor)

1	2	3	4	5	6	7	8

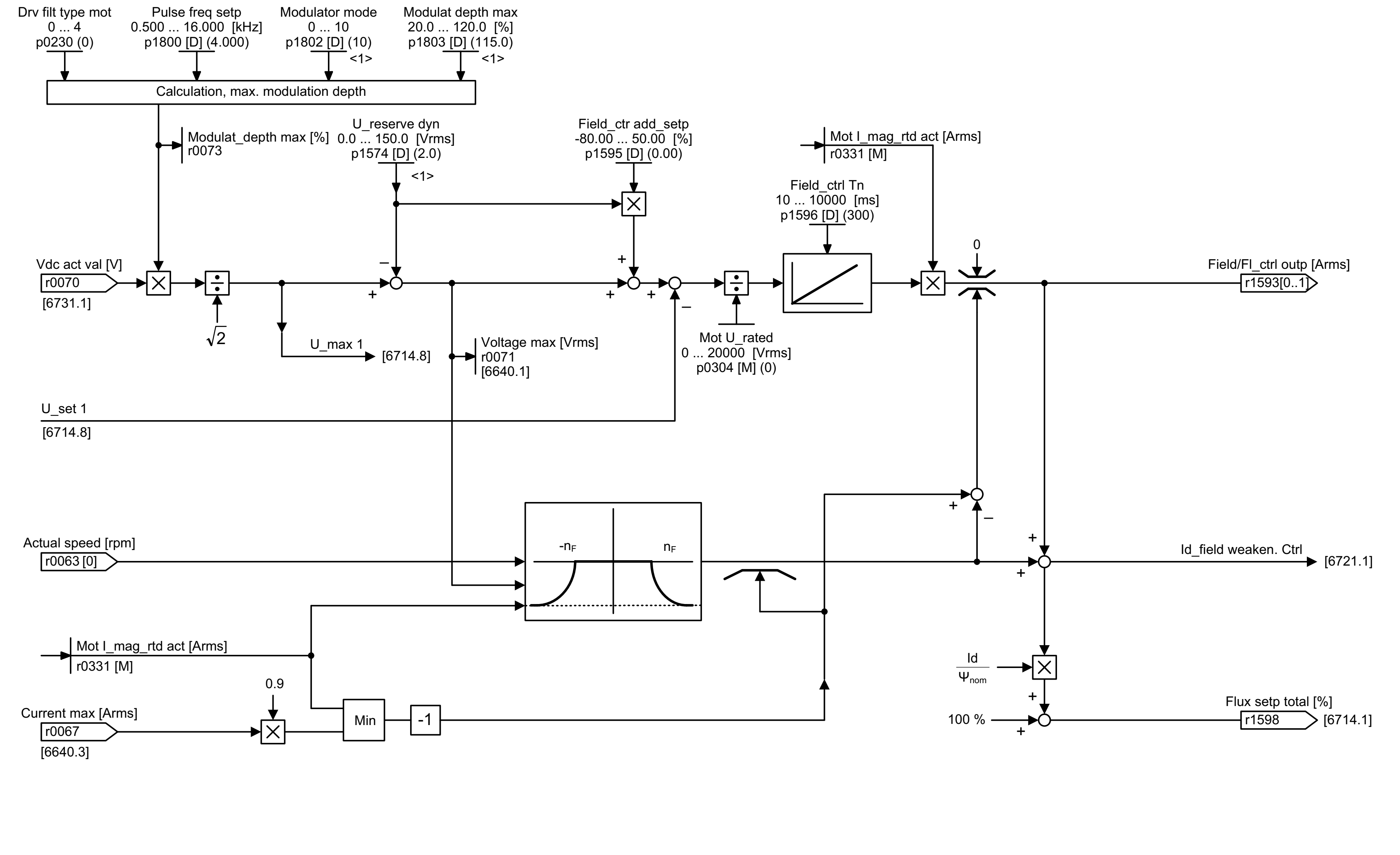
Vector control / U/f control	fp_6722_97_01.vsd	Function diagram	- 6722 -
Field weakening characteristic, flux setpoint (ASM, p0300 = 1)	13.03.2018 V4.7_10	G120 CU230P-2	



1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6723_97_01.vsd	Function diagram	- 6723 -
Field weakening controller, flux controller, Id setpoint (ASM, p0300 = 1)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-92 6723 – Field weakening controller, flux controller, Id setpoint (ASM, p0300 = 1)

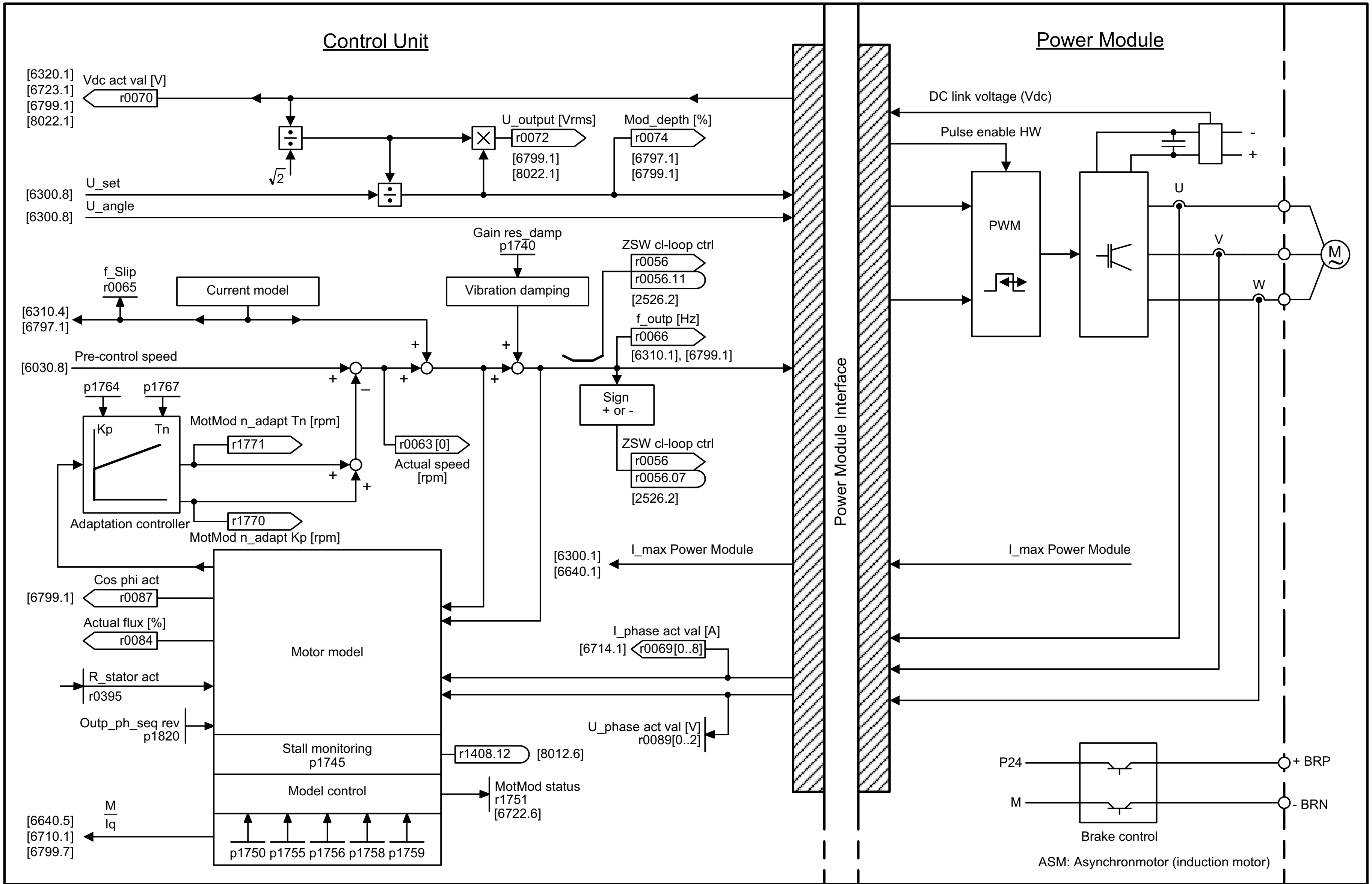
Fig. 3-93 6724 – Field weakening controller (PMSM, p0300 = 2xx)



<1> Value range and/or factory setting depend on p0500.

PMSM: Permanent-magnet synchronous motor

1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6724_97_01.vsd	Function diagram	- 6724 -
Field weakening controller (PMSM, p0300 = 2xx)					13.03.2018 V4.7_10	G120 CU230P-2	



1	2	3	4	5	6	7	8

Vector control / U/f control	fp_6730_97_01.vsd	Function diagram	- 6730 -
Interface to the Power Module (ASM, p0300 = 1)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-94 6730 – Interface to the Power Module (ASM, p0300 = 1)

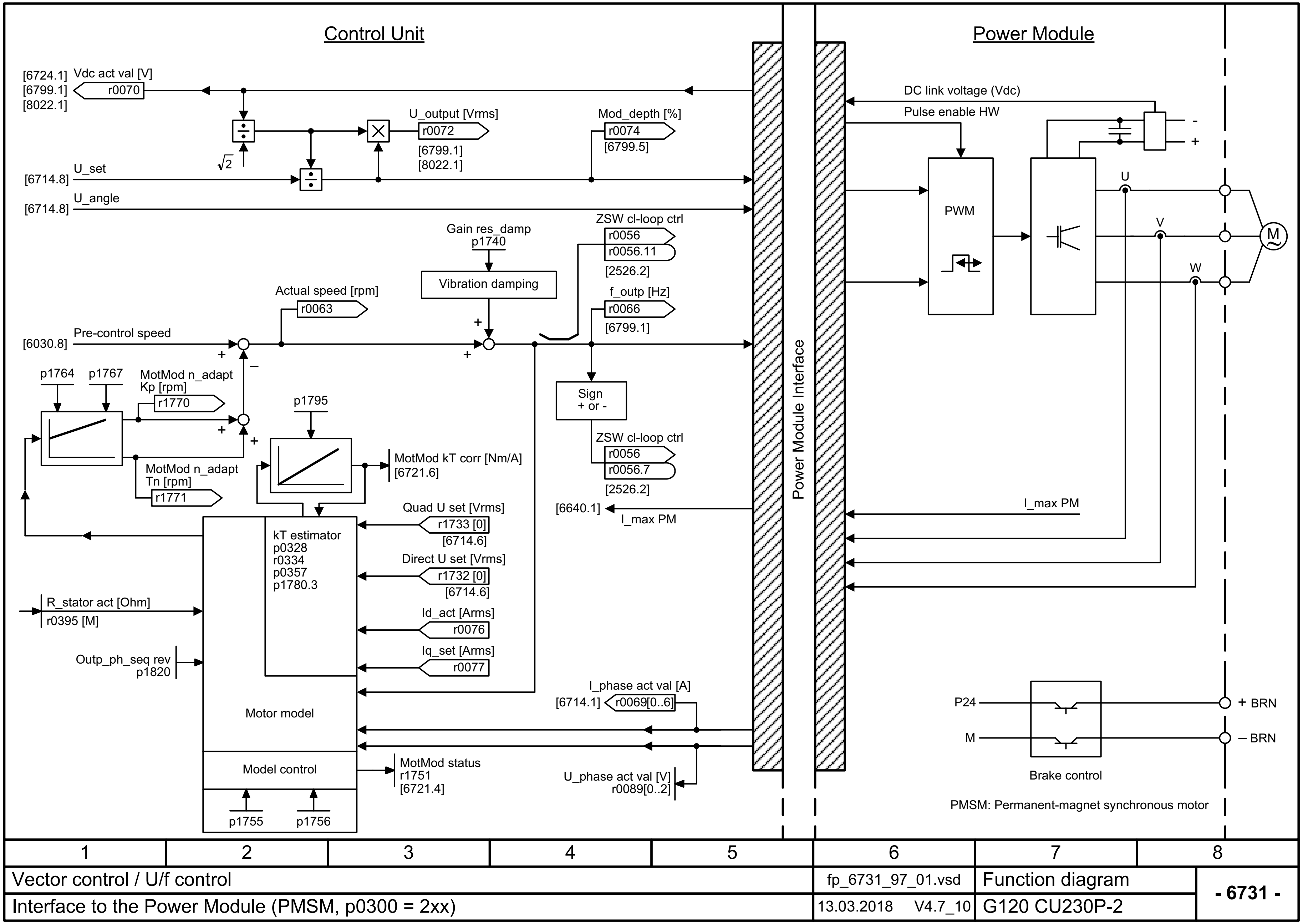
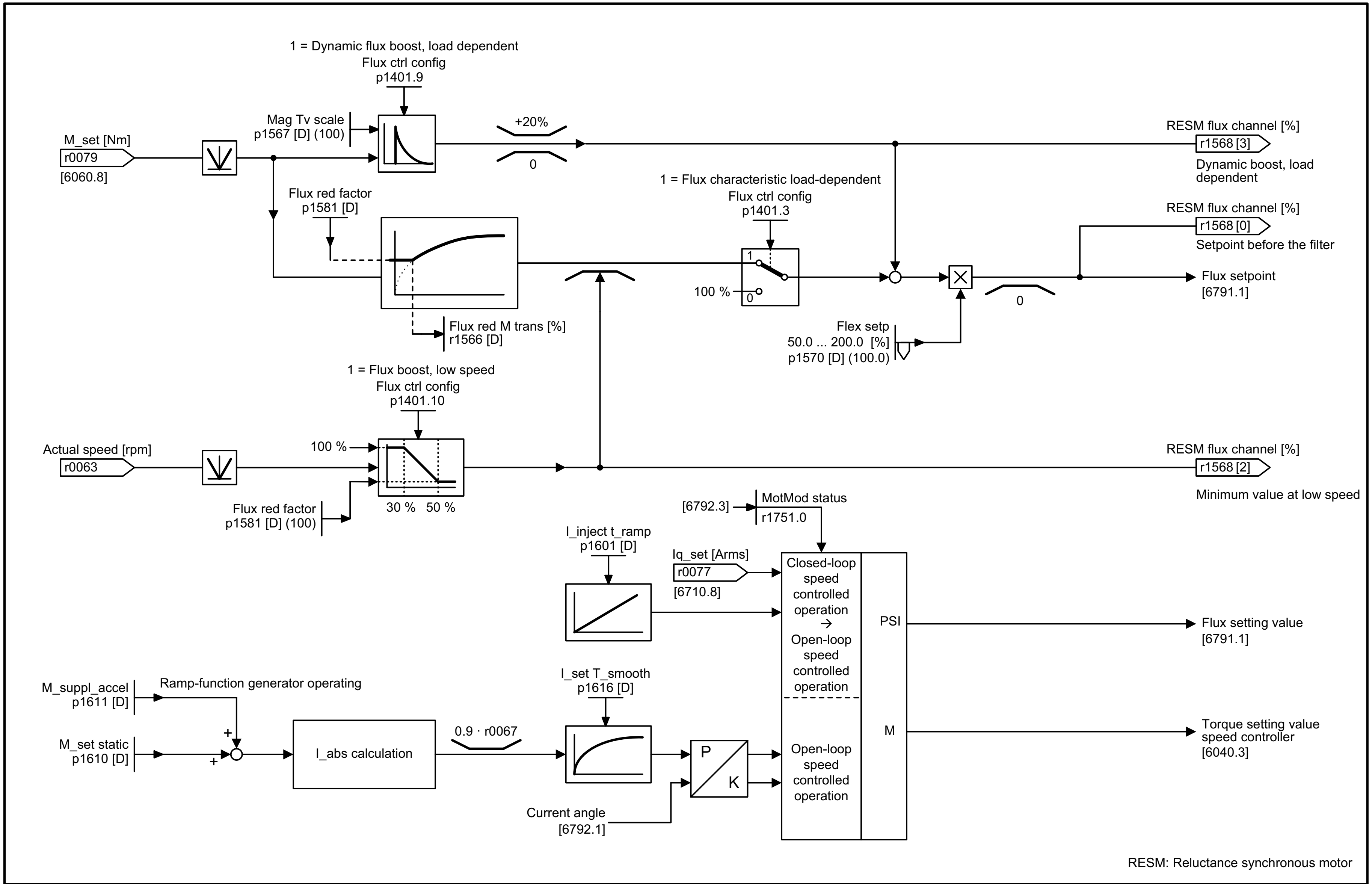


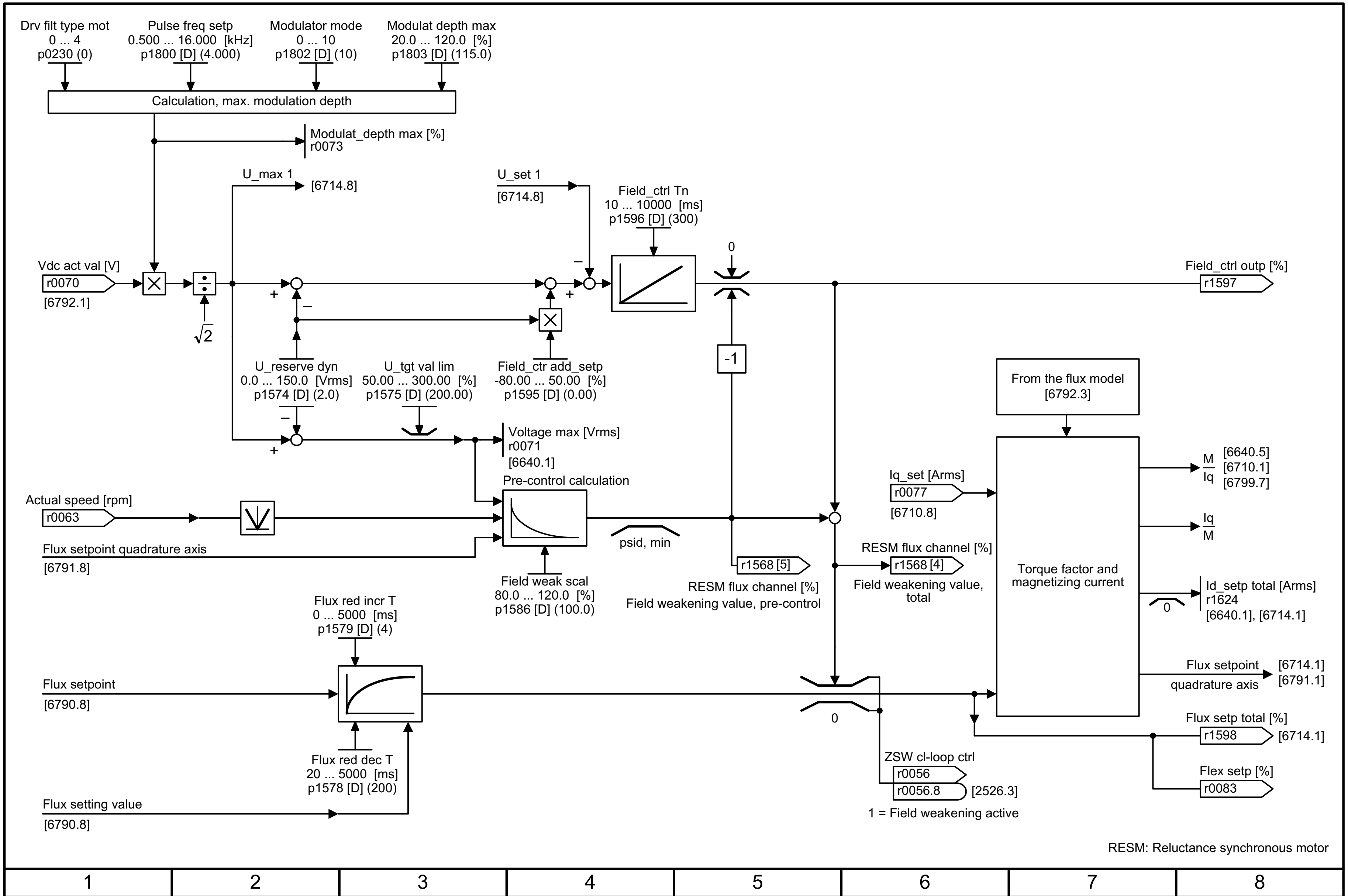
Fig. 3-95 6731 – Interface to the Power Module (PMSM, p0300 = 2xx)



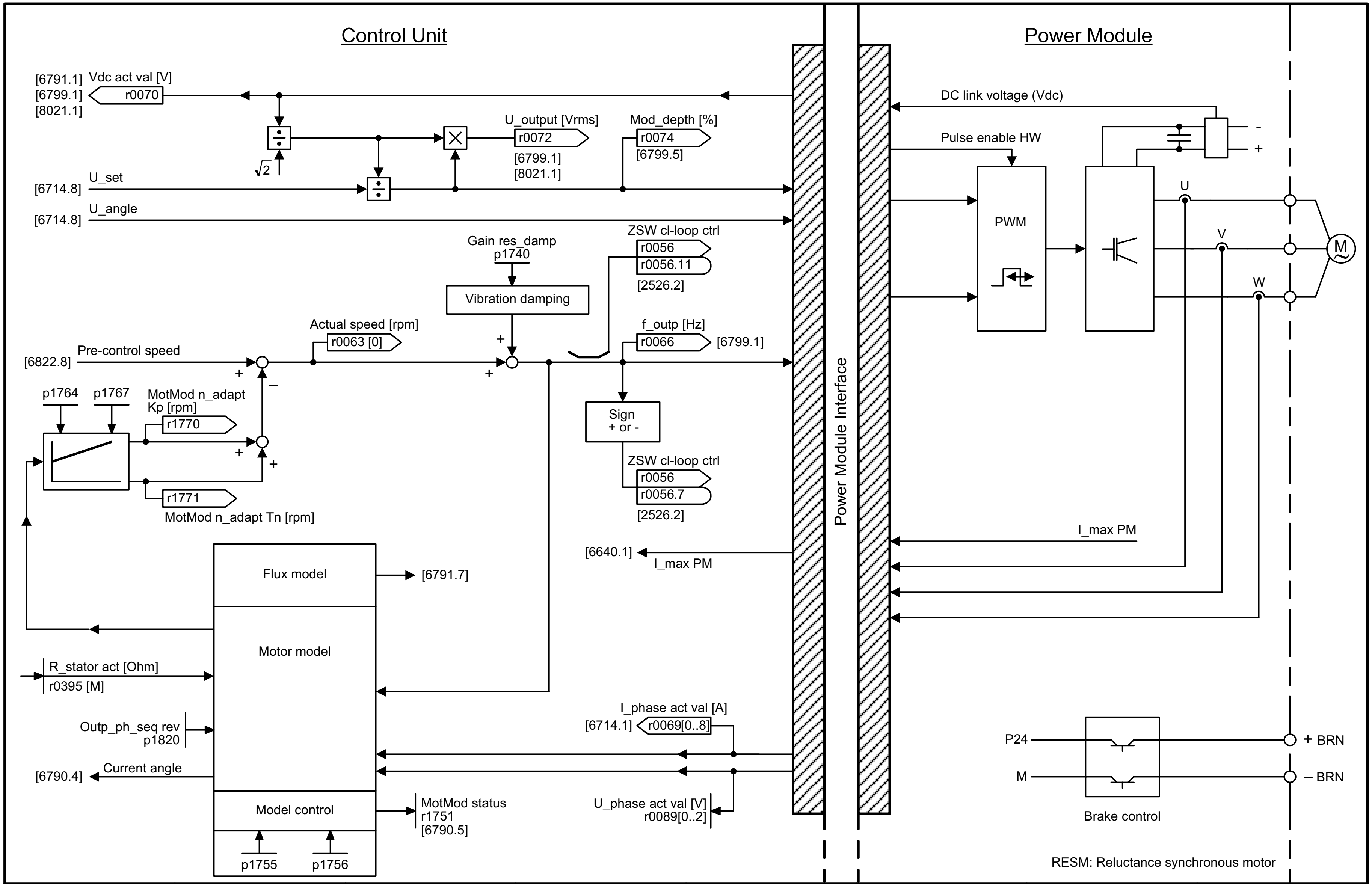
1	2	3	4	5	6	7	8
Vector control / U/f control					fp_6790_97_01.vsd	Function diagram	- 6790 -
Flux setpoint (RESM, p0300 = 6xx)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-96 6790 – Flux setpoint (RESM, p0300 = 6xx)

Fig. 3-97 6791 – Id setpoint (RESM, p0300 = 6xx)



Vector control / U/f control	fp_6791_97_01.vsd	Function diagram	- 6791 -
Id setpoint (RESM, p0300 = 6xx)	13.03.2018 V4.7_10	G120 CU230P-2	

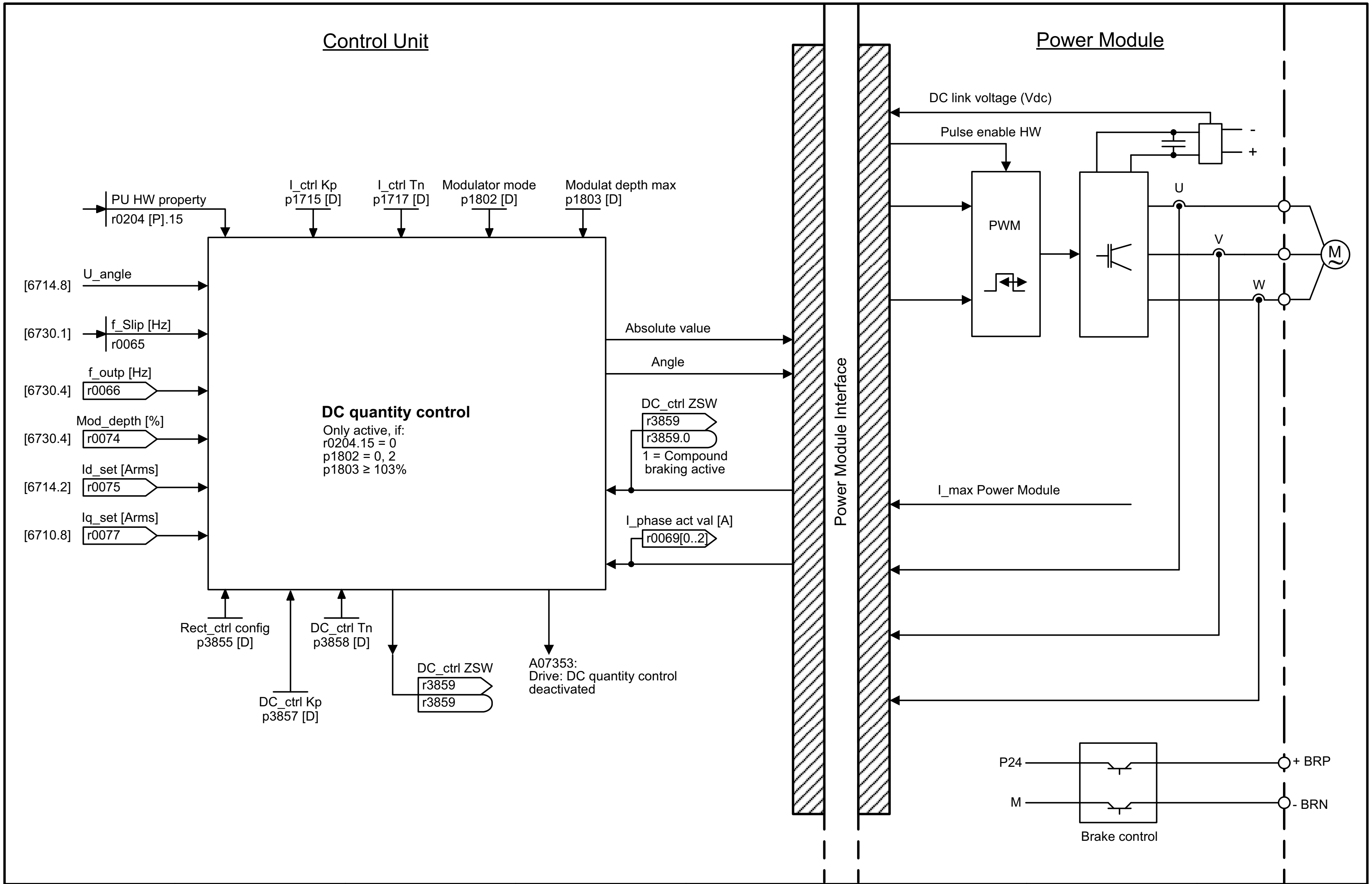


1	2	3	4	5	6	7	8

Vector control / U/f control	fp_6792_97_01.vsd	Function diagram	- 6792 -
Interface to the Power Module (RESM, p0300 = 6xx)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-98 6792 – Interface to the Power Module (RESM, p0300 = 6xx)

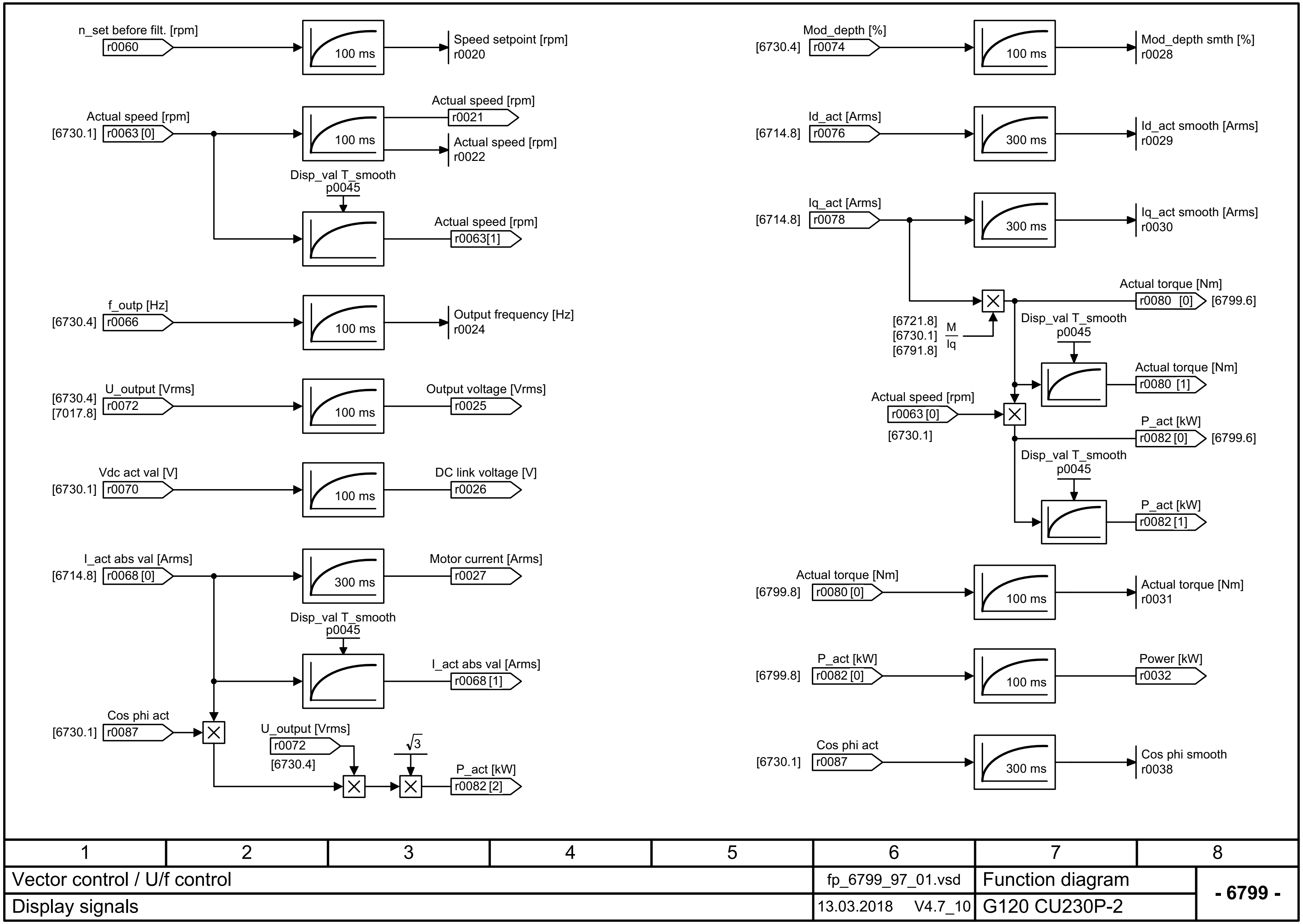
Fig. 3-99 6797 – Closed-loop DC quantity control (ASM, p0300 = 1, PM230/PM240)



1	2	3	4	5	6	7	8

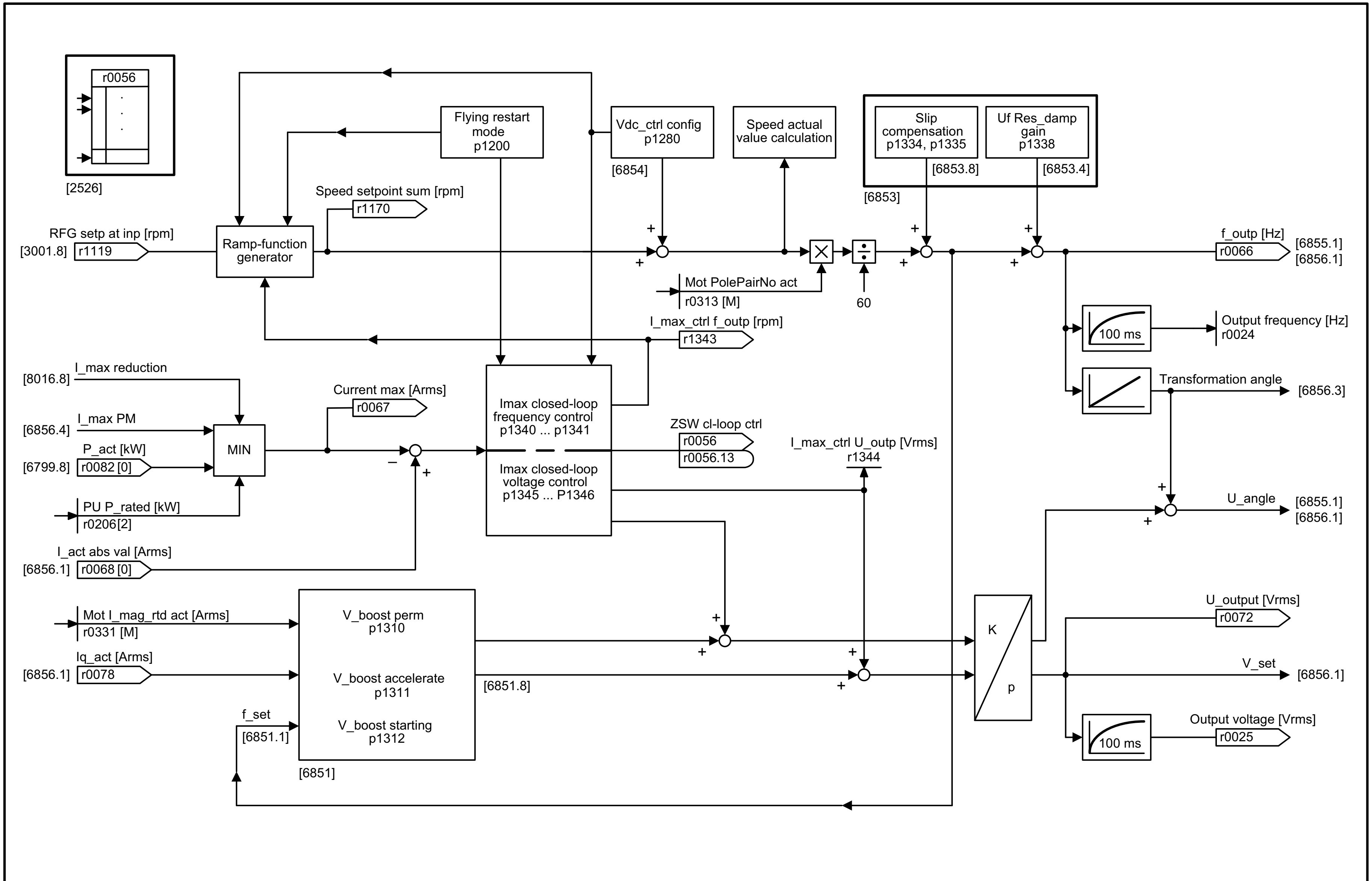
Vector control / U/f control	fp_6797_97_01.vsd	Function diagram	- 6797 -
Closed-loop DC quantity control (ASM, p0300 = 1, PM230/PM240)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-100 6799 – Display signals



3.11 U/f control, Standard Drive Control (p0096 = 1)

Function diagrams



1	2	3	4	5	6	7	8

U/f control, Standard Drive Control	fp_6850_97_01.vsd	Function diagram	- 6850 -
U/f control, overview (p0096 = 1)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-101 6850 – U/f control, overview (p0096 = 1)

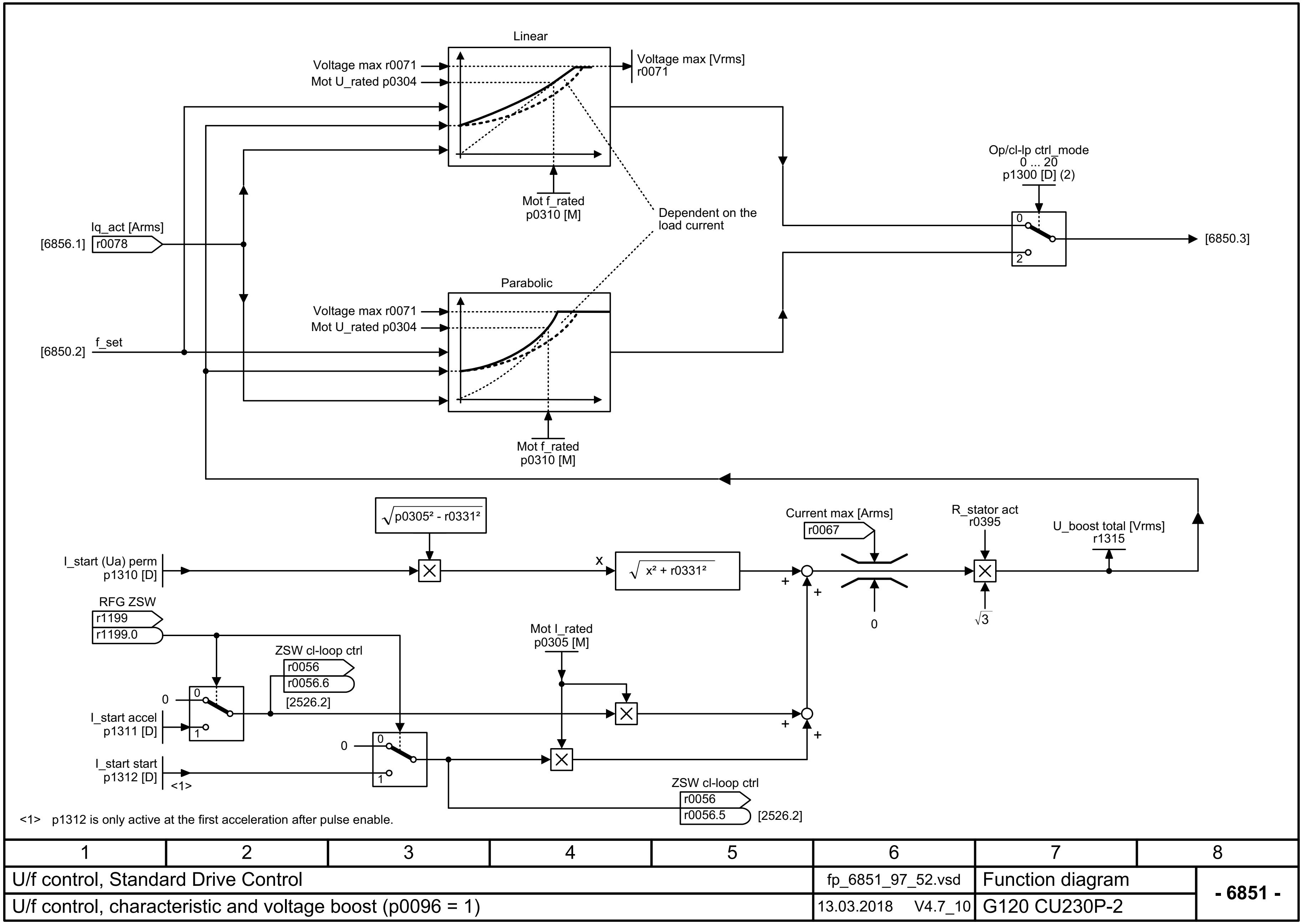
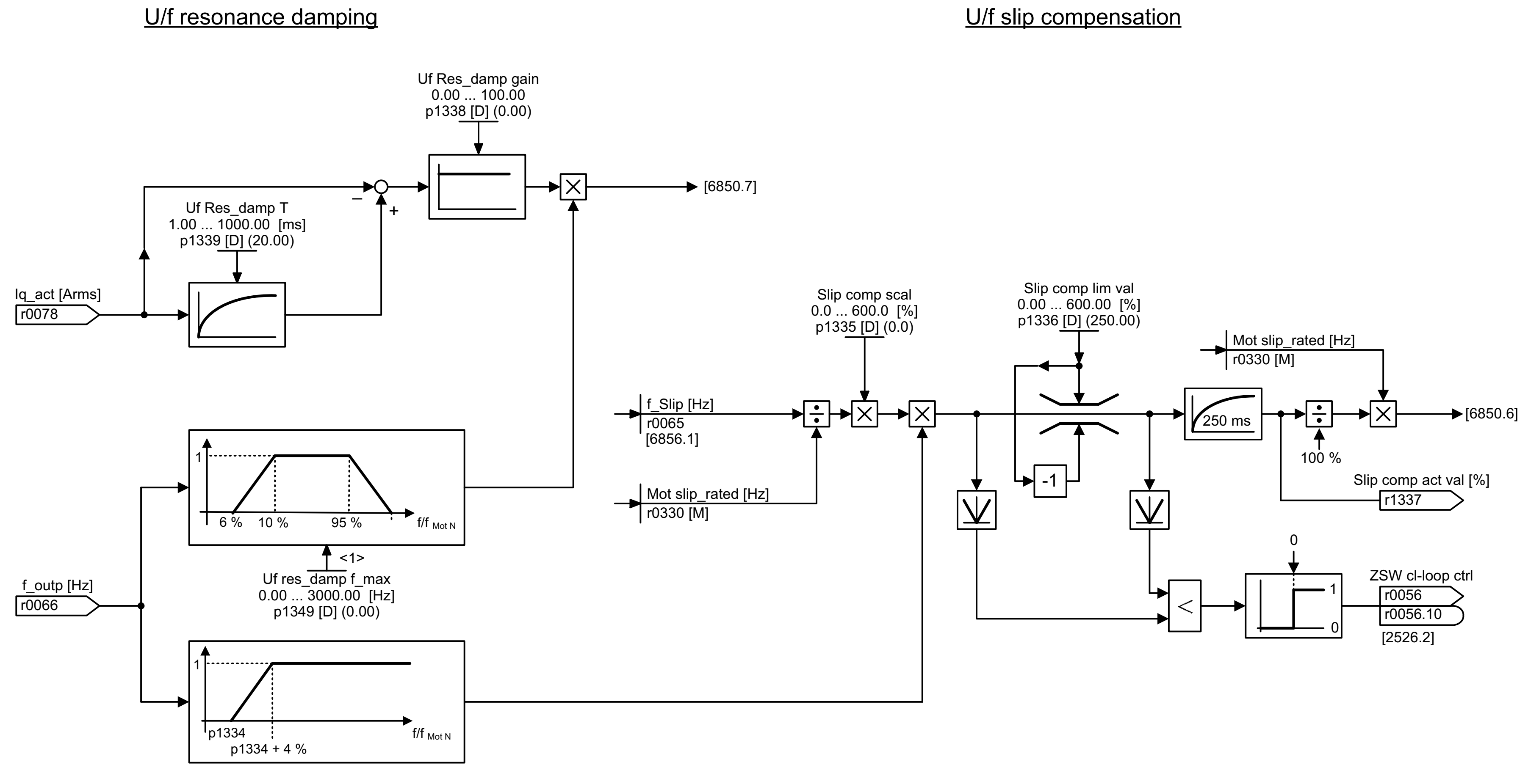


Fig. 3-102 6851 – U/f control, characteristic and voltage boost (p0096 = 1)



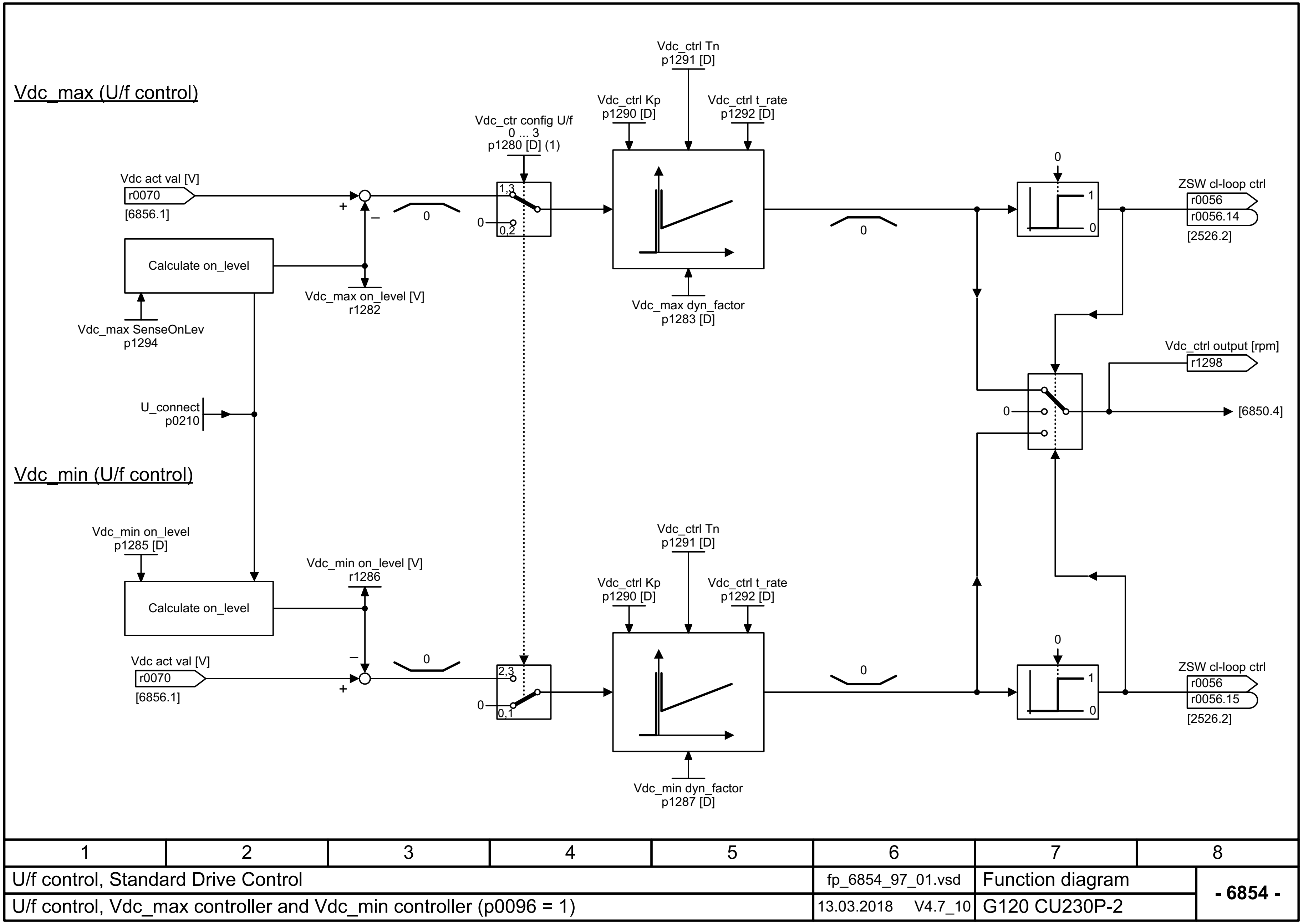
<1> If p1349 = 0: the limit is 0.95 · f Mot N ≤ 45 Hz.

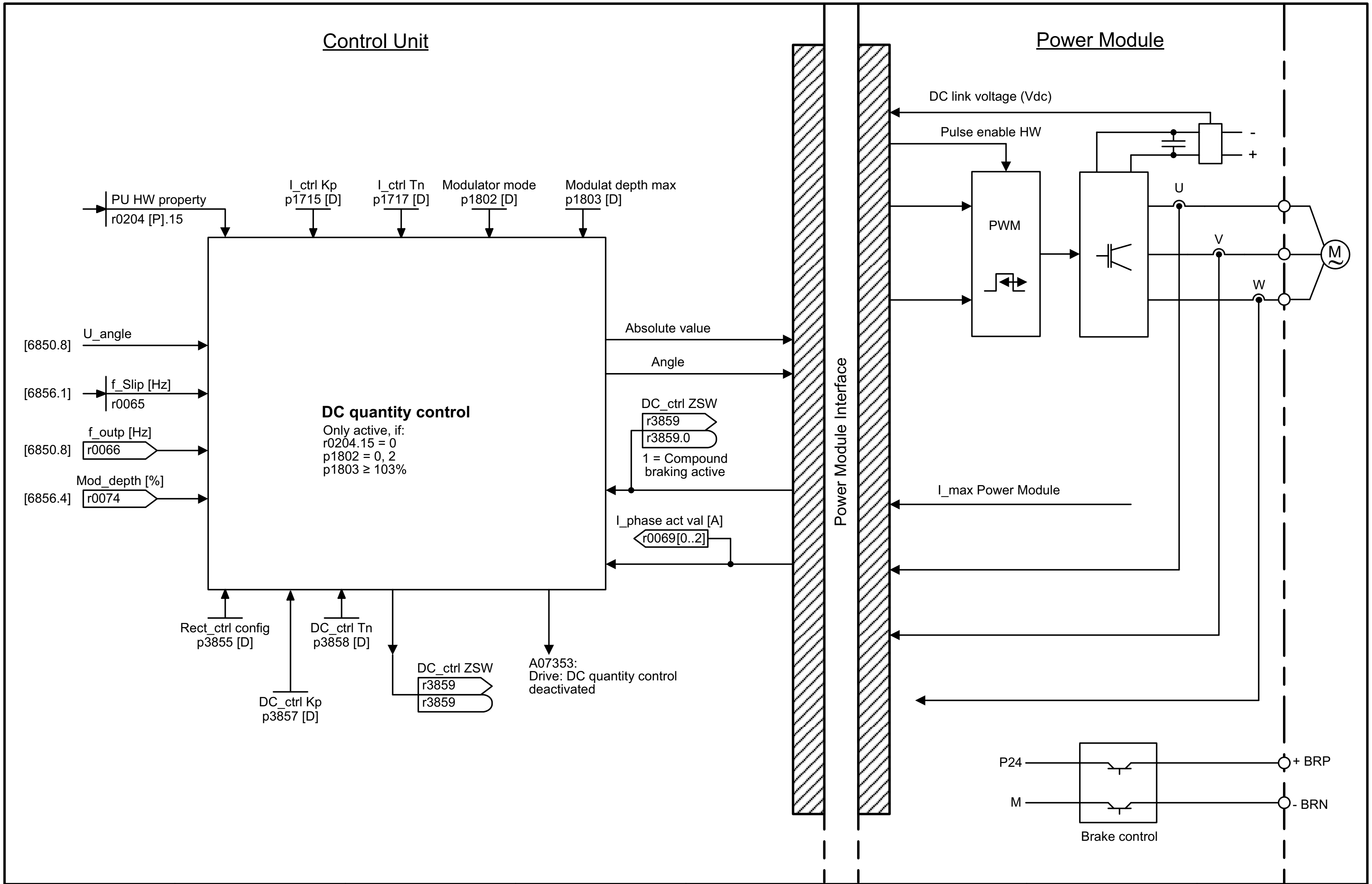
1	2	3	4	5	6	7	8

U/f control, Standard Drive Control	fp_6853_97_01.vsd	Function diagram	- 6853 -
U/f control, Resonance damping and slip compensation (p0096 = 1)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-103 6853 – U/f control, resonance damping and slip compensation (p0096 = 1)

Fig. 3-104 6854 – U/f control, Vdc_max controller and Vdc_min controller (U/f) (p0096 = 1)





1	2	3	4	5	6	7	8

U/f control, Standard Drive Control	fp_6855_97_01.vsd	Function diagram	- 6855 -
U/f control, Closed-loop DC quantity control (ASM, p0300 = 1, p0096 = 1)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-105 6855 – U/f control, DC quantity control (ASM, p0300 = 1, p0096 = 1)

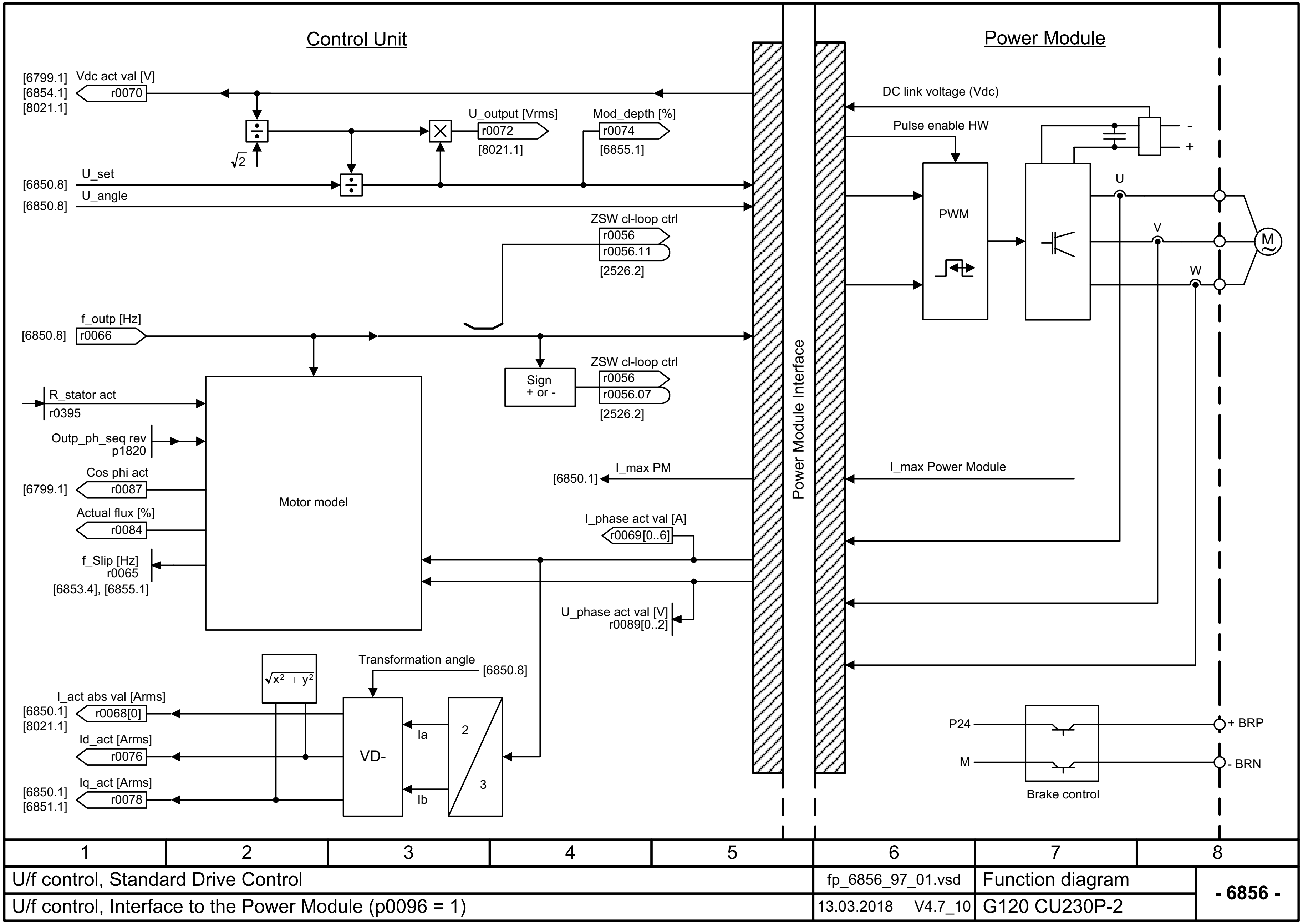
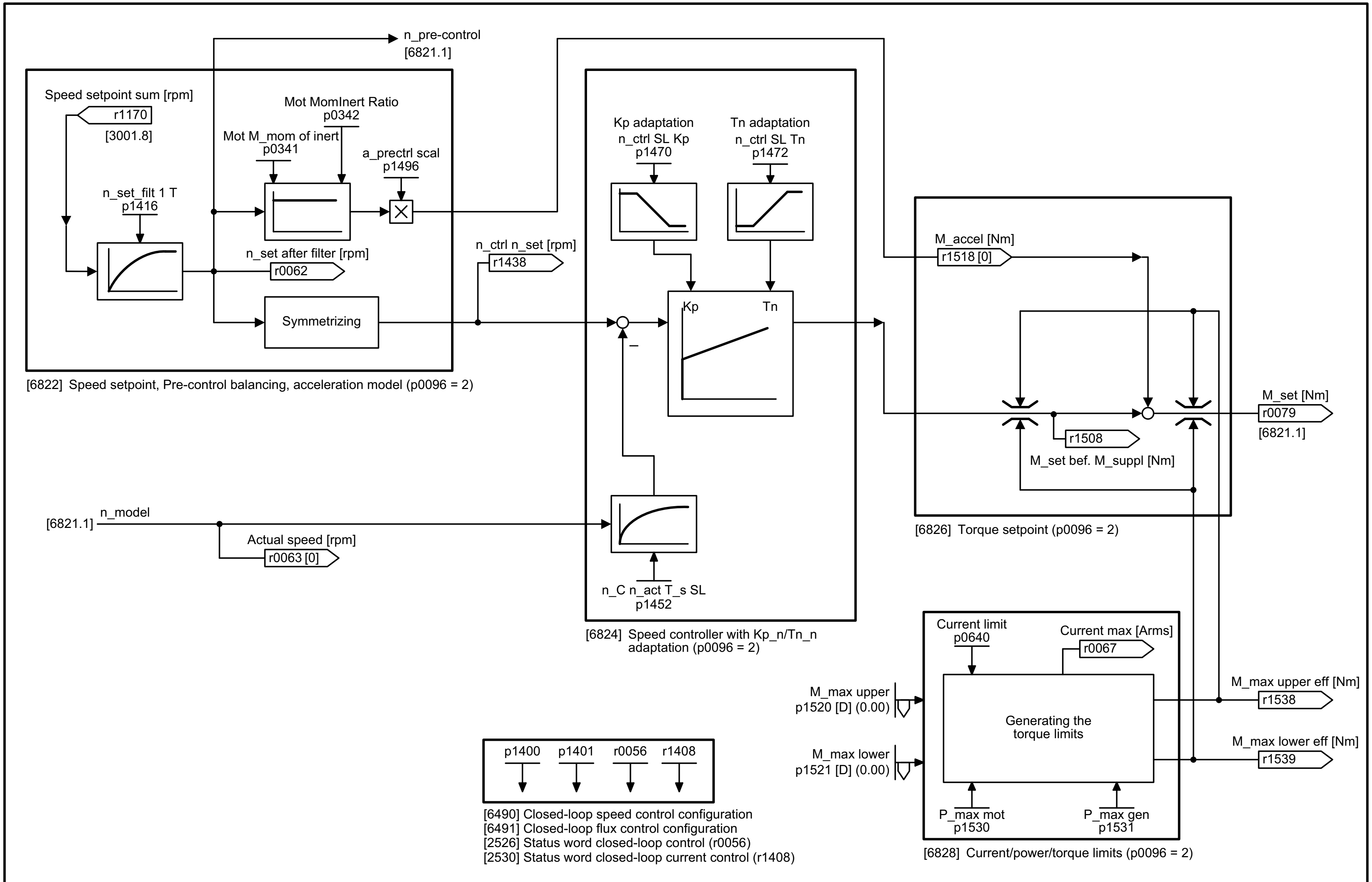


Fig. 3-106 6856 – U/f control, interface to the Power Module (p0096 = 1)

3.12 Vector control, Dynamic Drive Control (p0096 = 2)

Function diagrams

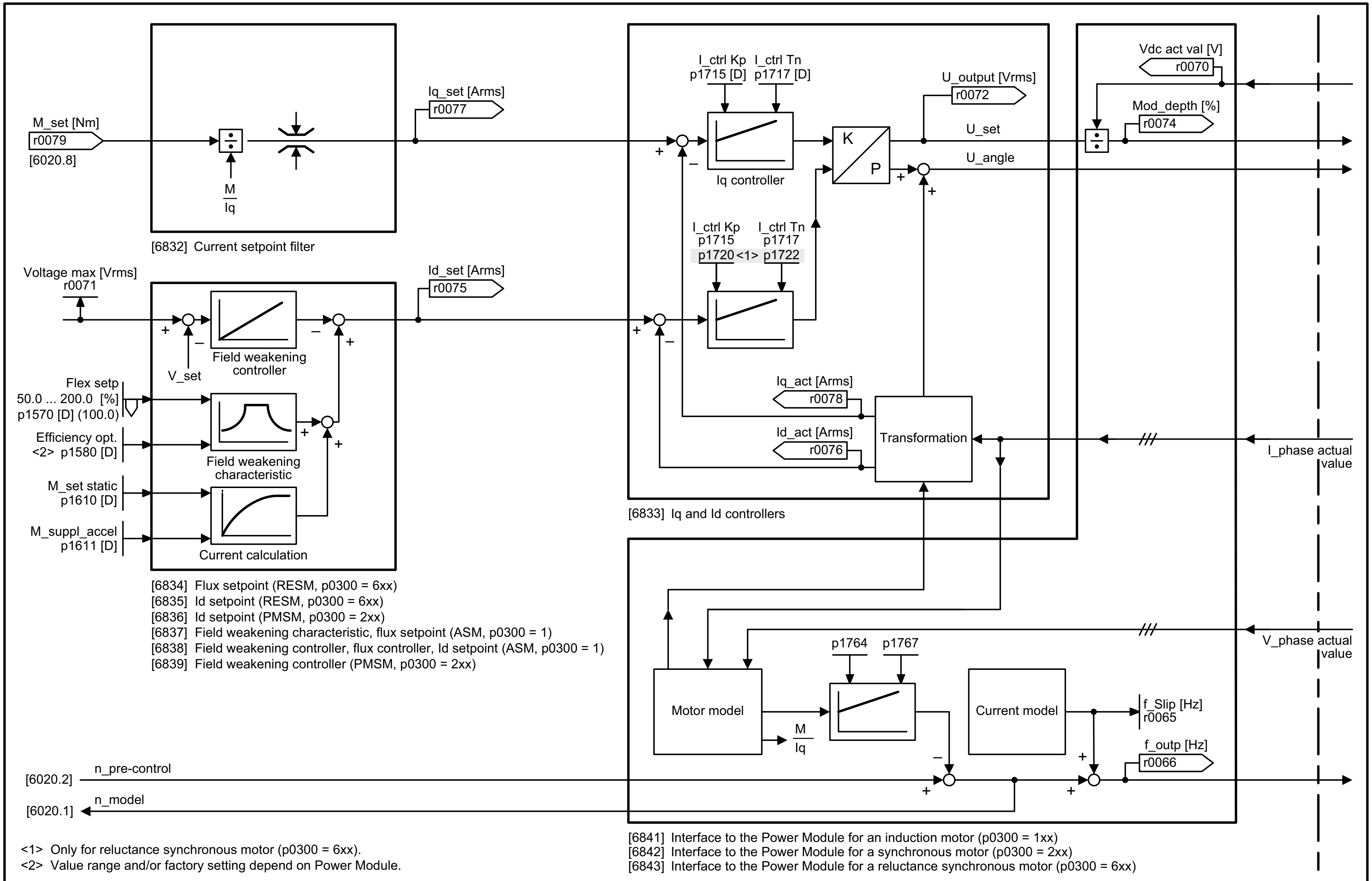
Fig. 3-107 6820 – Speed control and generation of the torque limits, overview (p0096 = 2)



1	2	3	4	5	6	7	8

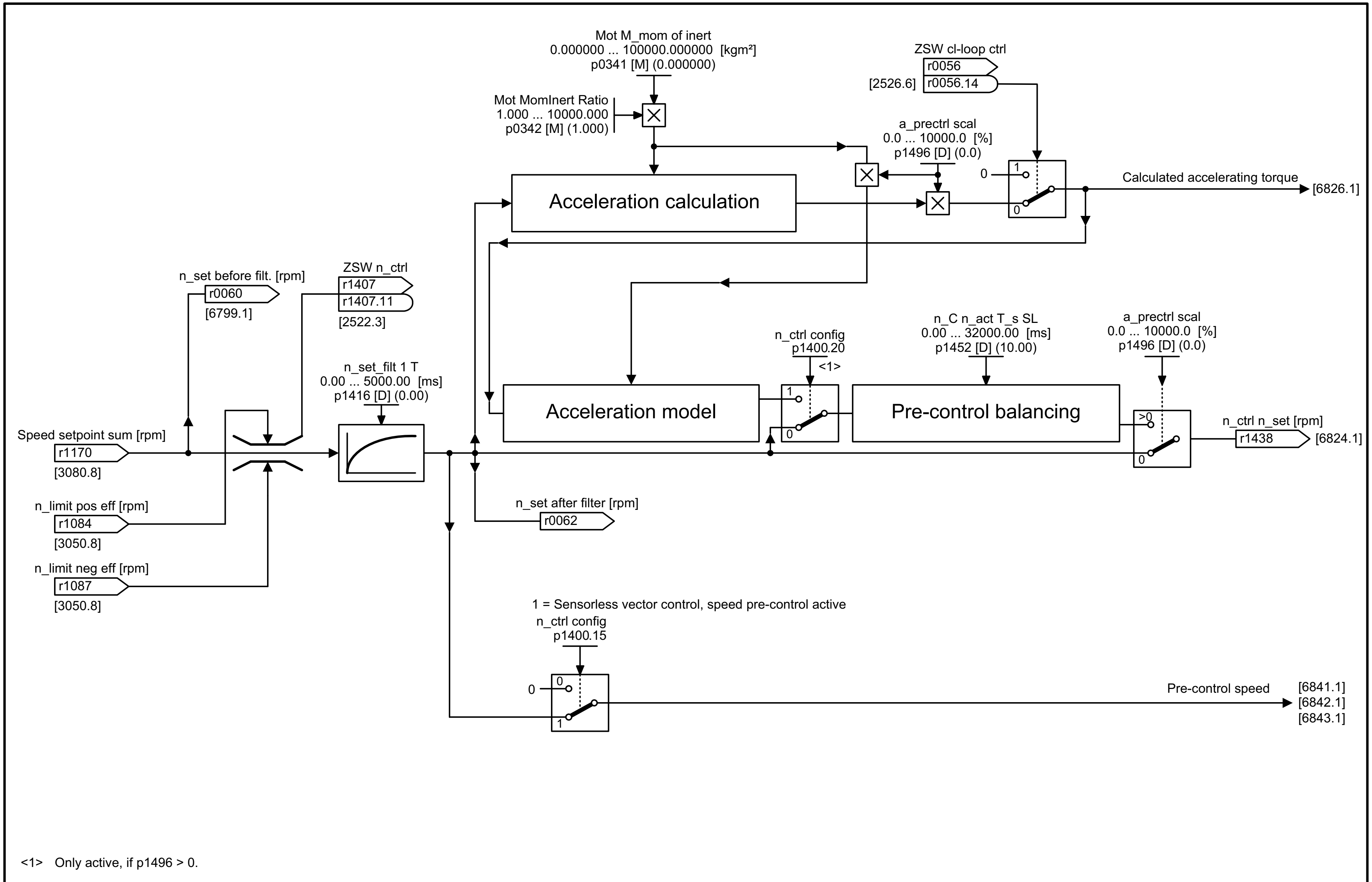
Vector control, Dynamic Drive Control	fp_6820_97_01.vsd	Function diagram	- 6820 -
Speed control and generation of the torque limits, overview (p0096 = 2)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-108 6821 – Current control, overview (p0096 = 2)



1	2	3	4	5	6	7	8

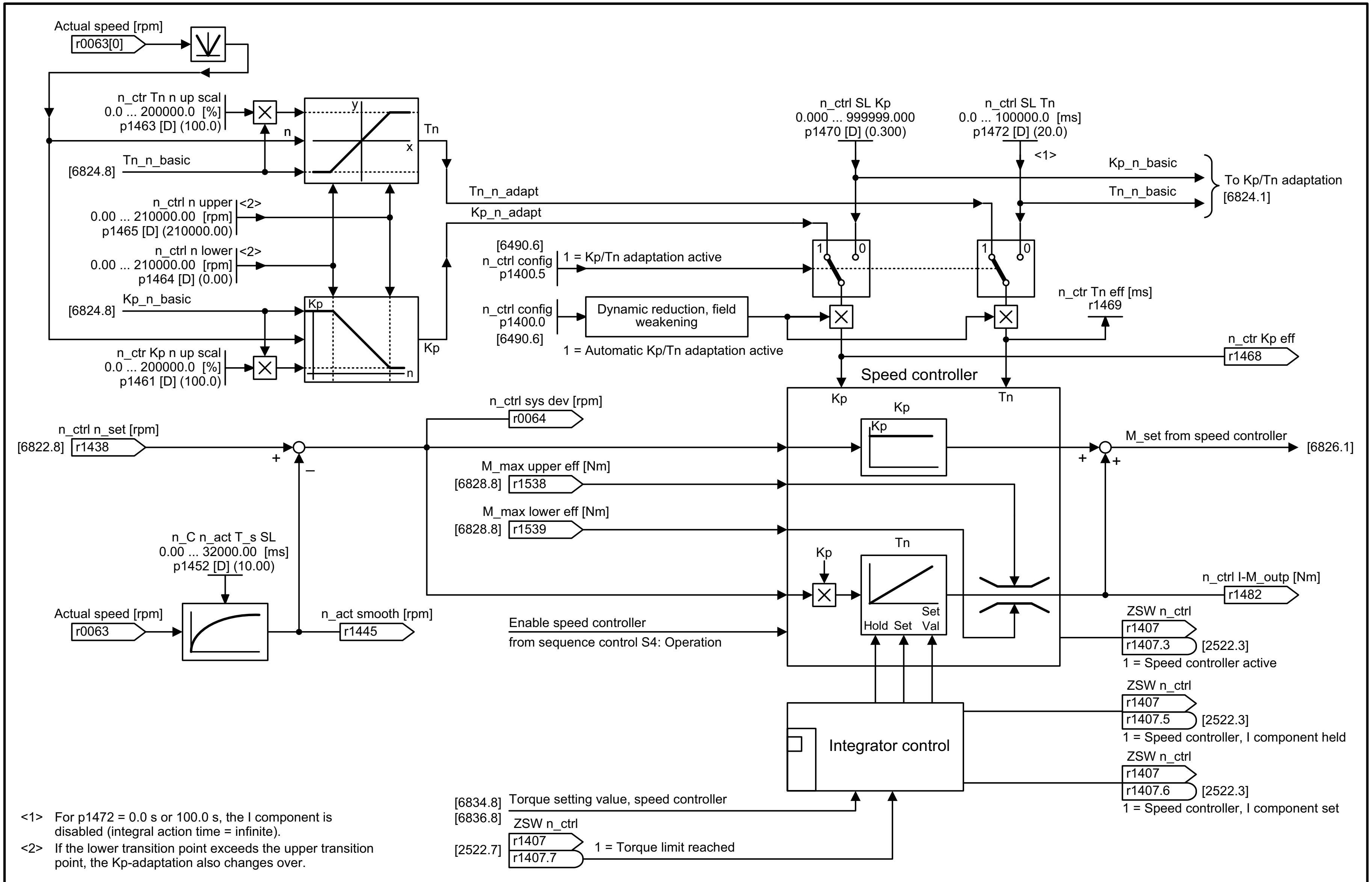
Vector control, Dynamic Drive Control	fp_6821_97_01.vsd	Function diagram	- 6821 -
Current control (p0096 = 2)	13.03.2018 V4.7_10	G120 CU230P-2	



1	2	3	4	5	6	7	8

Vector control, Dynamic Drive Control	fp_6822_97_01.vsd	Function diagram	- 6822 -
Speed setpoint, Pre-control balancing, acceleration model (p0096 = 2)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-109 6822 – Speed setpoint, precontrol balancing, acceleration model (p0096 = 2)

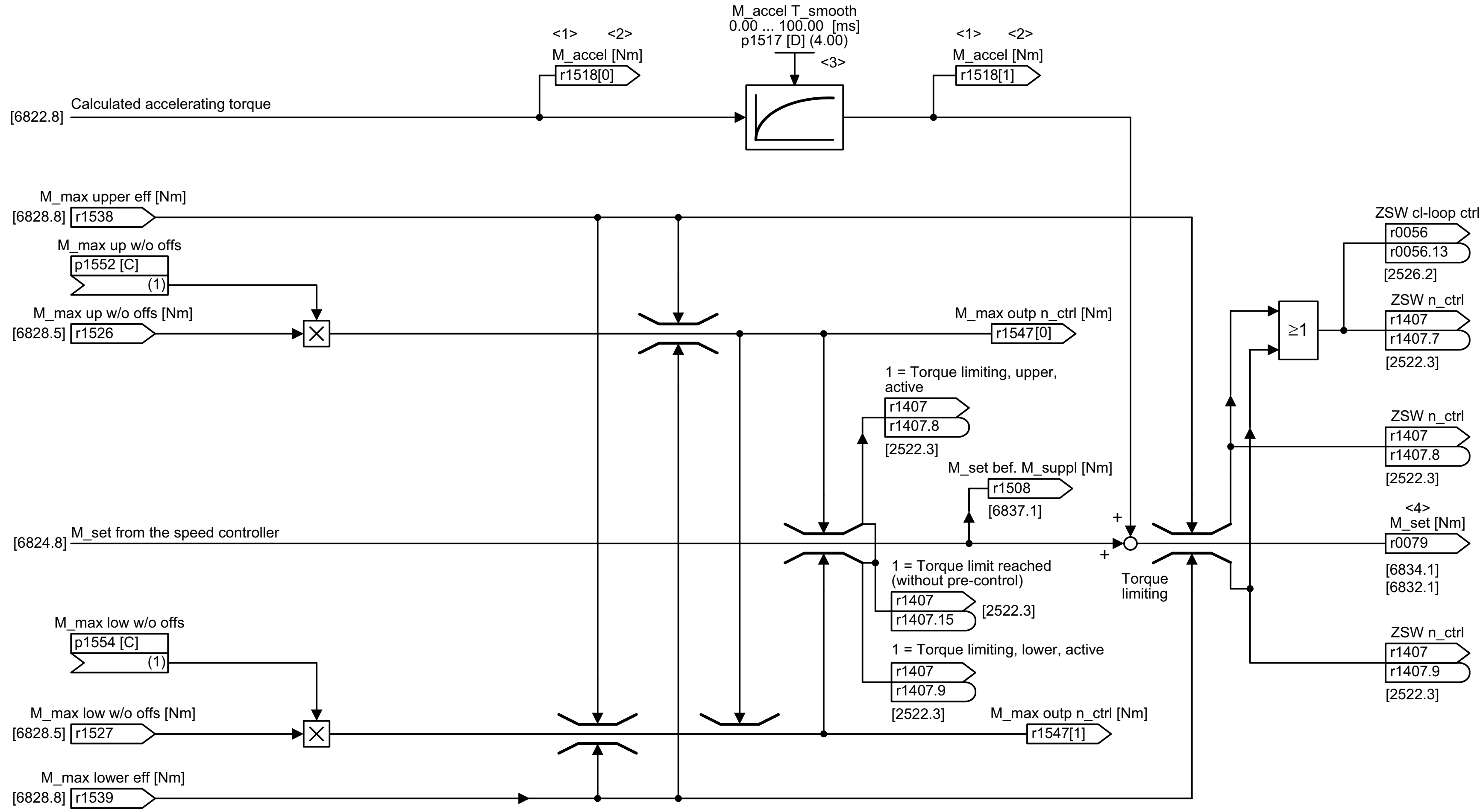


1	2	3	4	5	6	7	8

Vector control, Dynamic Drive Control	fp_6824_97_01.vsd	Function diagram	- 6824 -
Speed controller with Kp_n/Tn_n adaptation (p0096 = 2)	13.03.2018 V4.7_10	G120 CU230P-2	

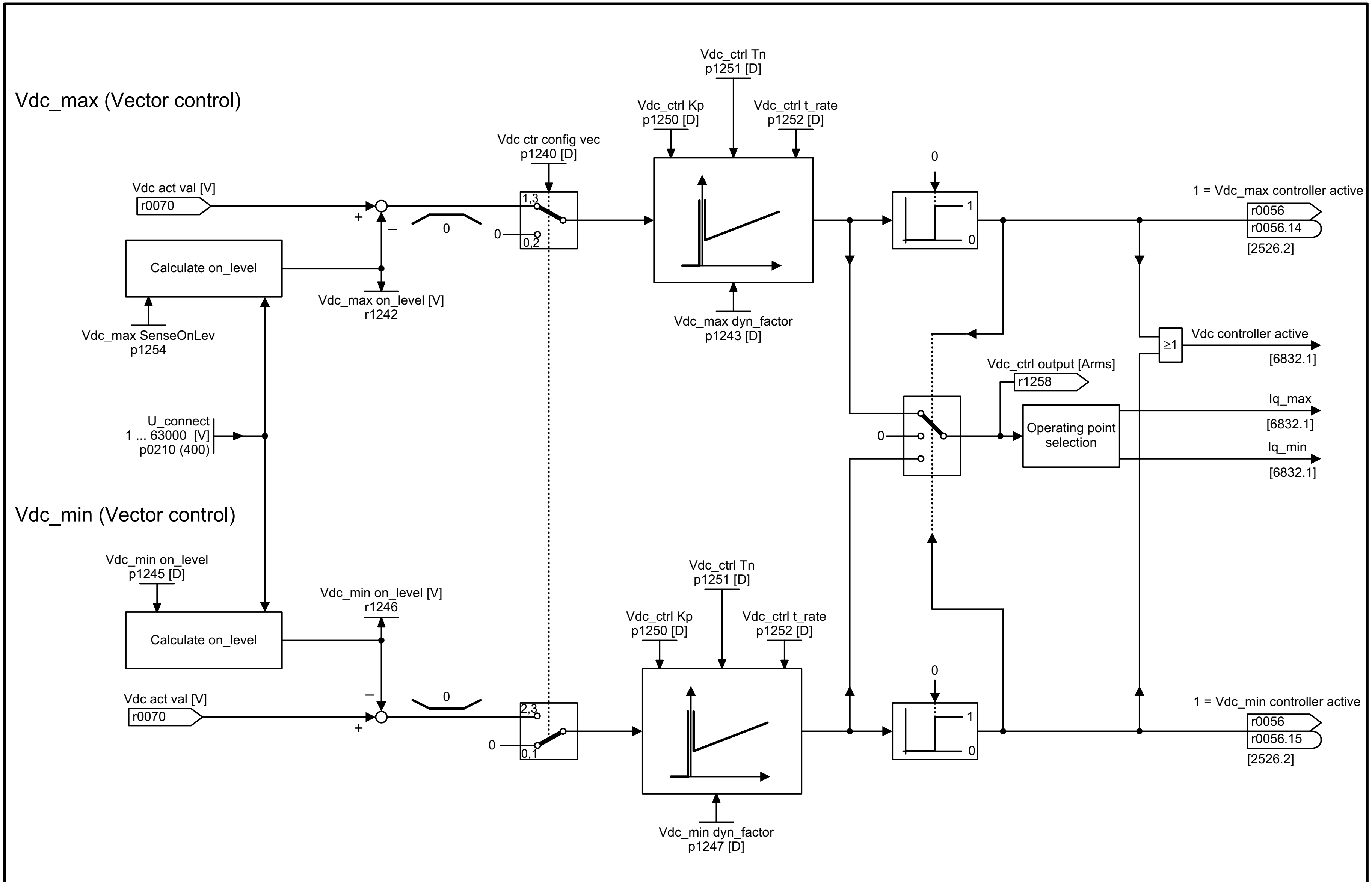
Fig. 3-110 6824 – Speed controller with Kp_n/Tn_n adaptation (p0096 = 2)

Fig. 3-111 6826 – Torque setpoint (p0096 = 2)



<1> The signal is only effective after magnetization has been completed (r0056.4 = 1).
<2> No pre-control if the Vdc controller is active [6220.8].
<3> Acceleration control is inhibited for p1517 = 100 ms.
<4> M_set is also influenced by the speed limit controller.

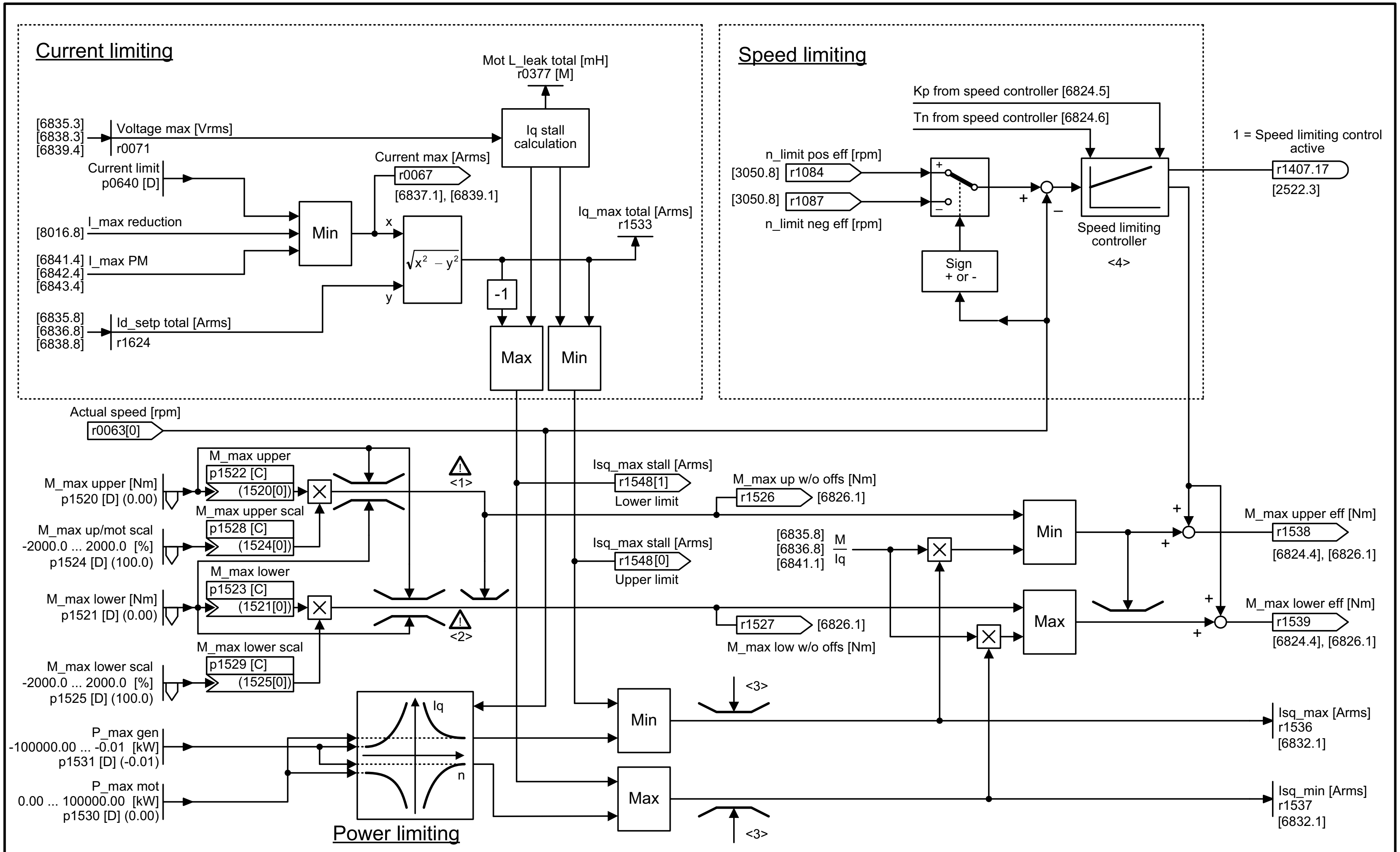
1	2	3	4	5	6	7	8
Vector control, Dynamic Drive Control					fp_6826_97_01.vsd	Function diagram	- 6826 -
Torque setpoint (p0096 = 2)					13.03.2018 V4.7_10	G120 CU230P-2	



1	2	3	4	5	6	7	8
Vector control, Dynamic Drive Control					fp_6827_97_52.vsd	Function diagram	- 6827 -
Vdc_max controller and Vdc_min controller (p0096 = 2)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-112 6827 – Vdc_max controller and Vdc_min controller (p0096 = 2)

Fig. 3-113 6828 – Current/power/torque limits (p0096 = 2)

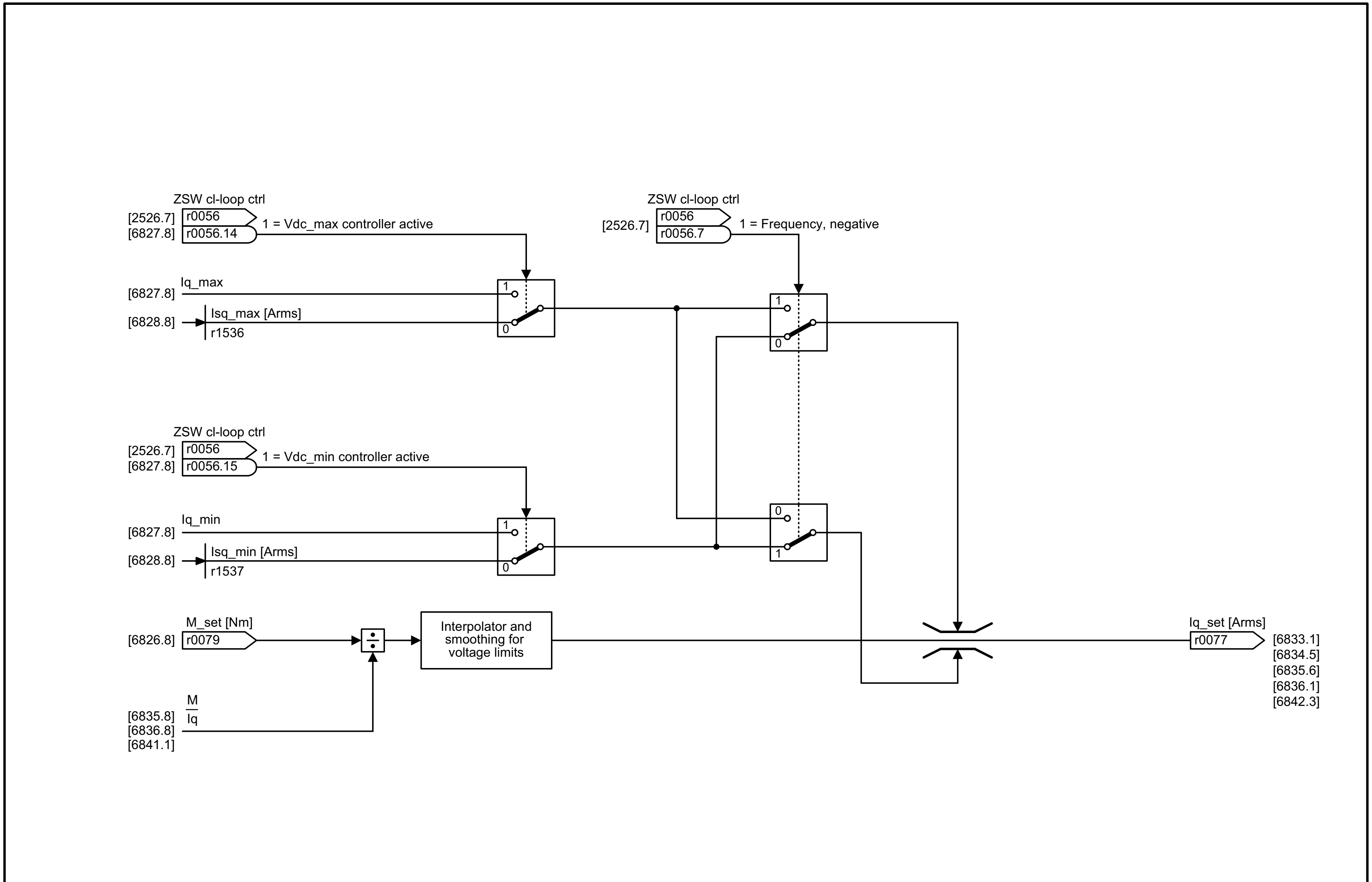


<1> <2> Danger: Negative values at <1> positive values at <2> represent a minimum torque for the other torque direction and can cause the motor to accelerate uncontrollably.

<3> Intervention by the Vdc controller.

<4> Intervention when the speed limit is exceeded + 2 % n_rated.

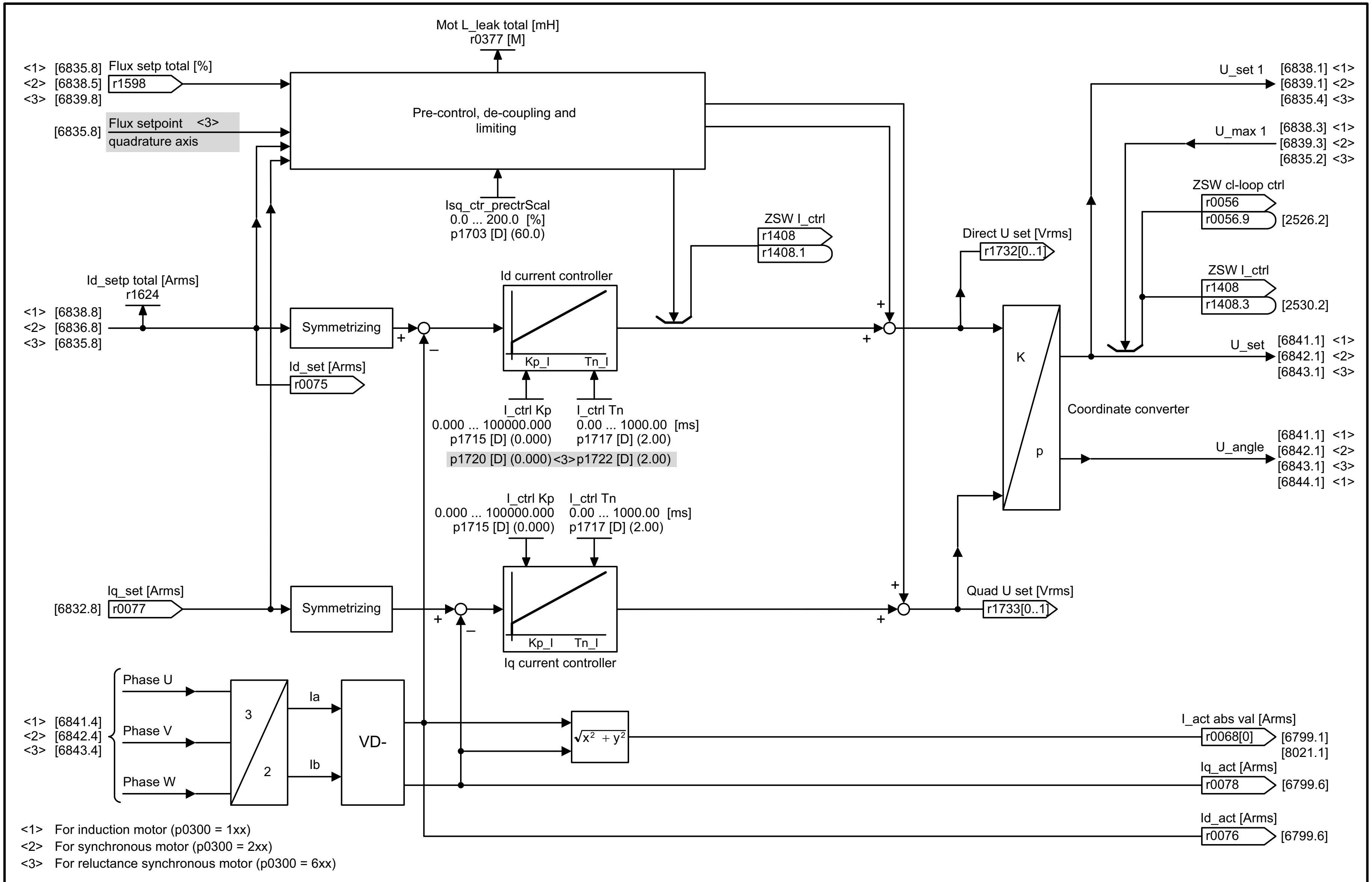
1	2	3	4	5	6	7	8
Vector control, Dynamic Drive Control					fp_6828_97_01.vsd	Function diagram	- 6828 -
Current/power/torque limits (p0096 = 2)					13.03.2018 V4.7_10	G120 CU230P-2	



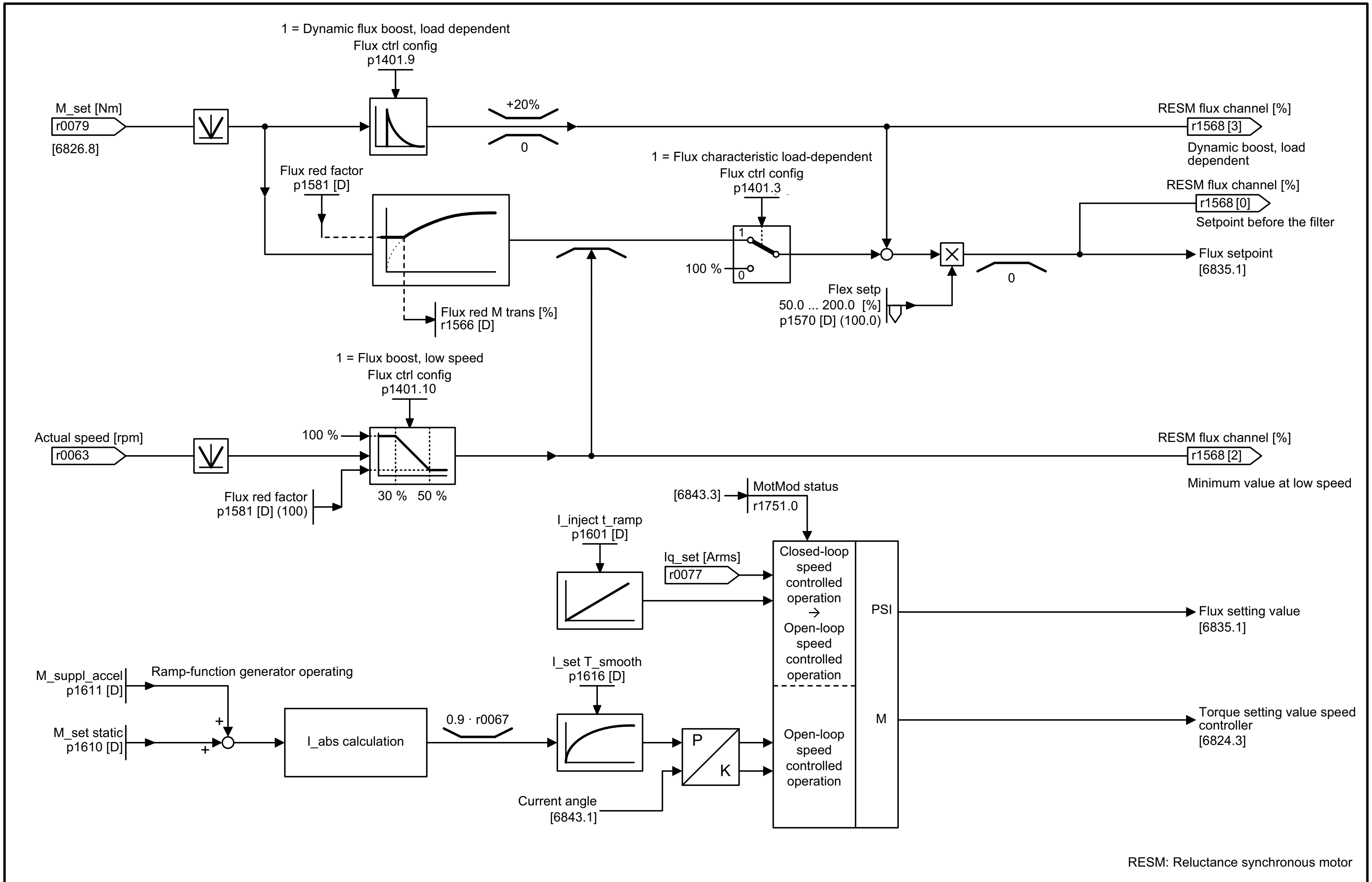
1	2	3	4	5	6	7	8
Vector control, Dynamic Drive Control					fp_6832_97_01.vsd	Function diagram	- 6832 -
Current setpoint filter (p0096 = 2)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-114 6832 – Current setpoint filter (p0096 = 2)

Fig. 3-115 6833 – Iq and Id controllers (p0096 = 2)



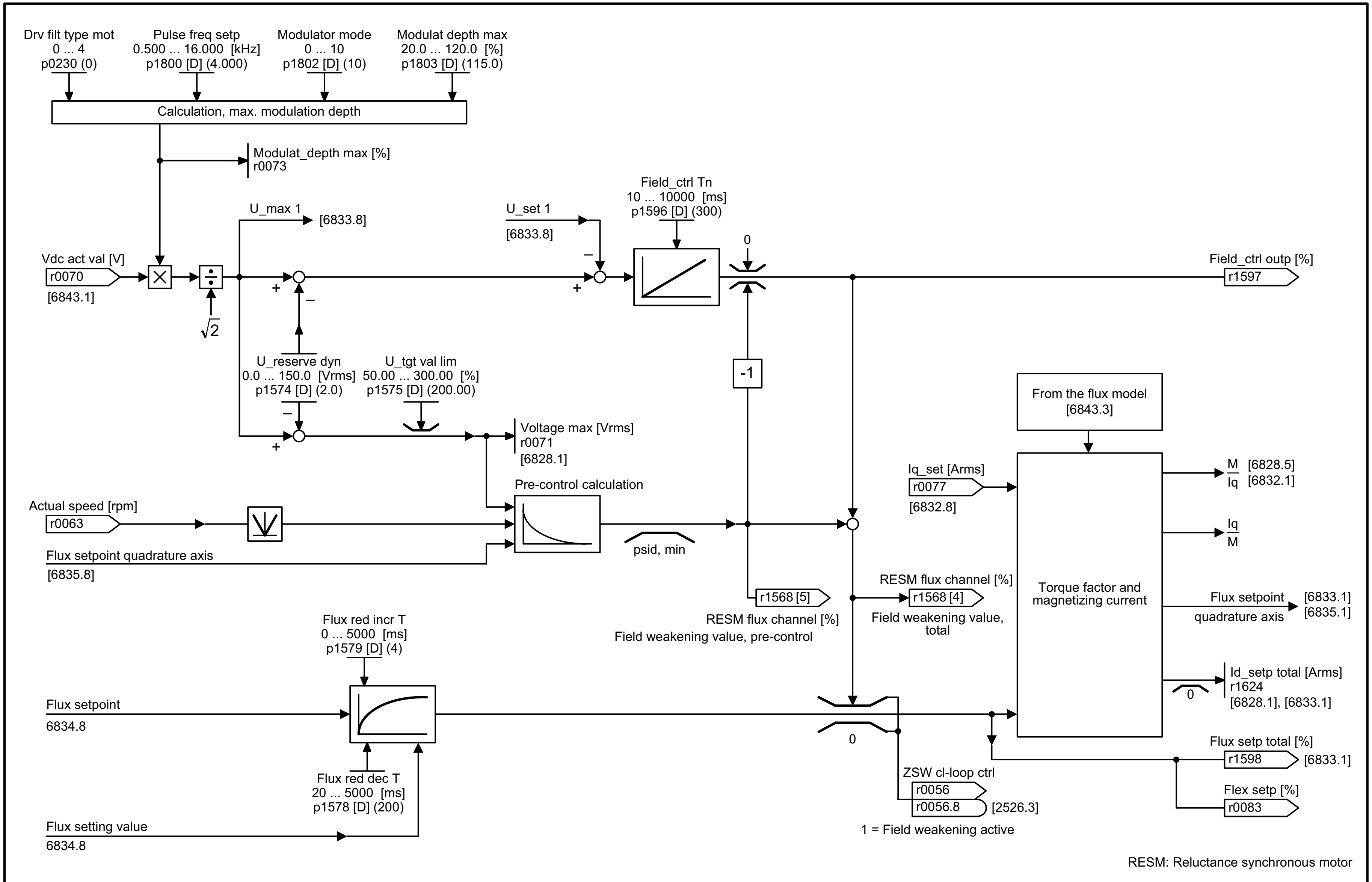
1	2	3	4	5	6	7	8
Vector control, Dynamic Drive Control					fp_6833_97_01.vsd	Function diagram	- 6833 -
Iq and Id controllers (p0096 = 2)					13.03.2018 V4.7_10	G120 CU230P-2	



1	2	3	4	5	6	7	8
Vector control, Dynamic Drive Control					fp_6834_97_01.vsd	Function diagram	- 6834 -
Flux setpoint (RESM, p0300 = 6xx, p0096 = 2)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-116 6834 – Flux setpoint (RESM, p0300 = 6xx, p0096 = 2)

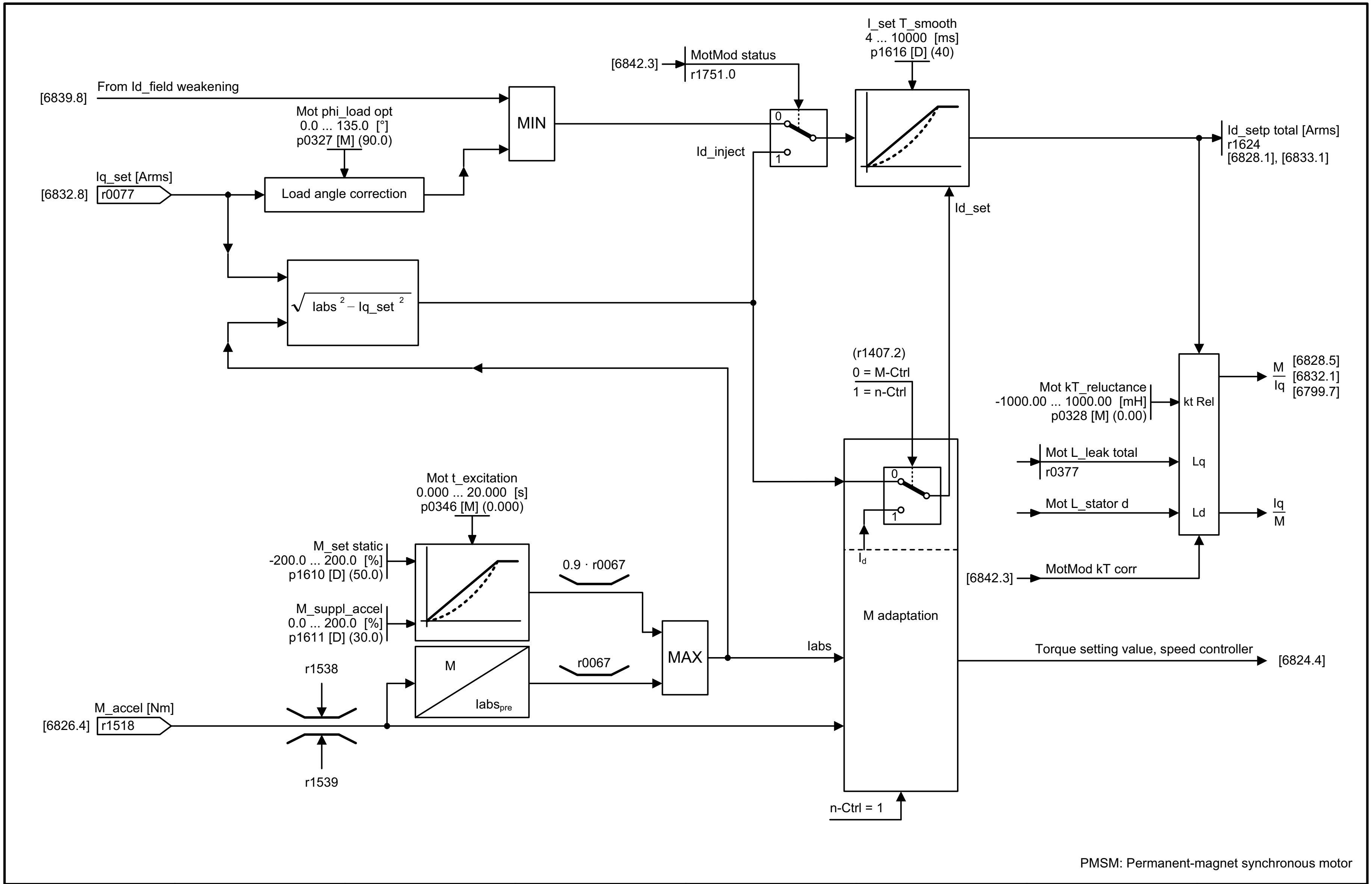
Fig. 3-117 6835 – Id setpoint (RESM, p0300 = 6xx, p0096 = 2)



1	2	3	4	5	6	7	8

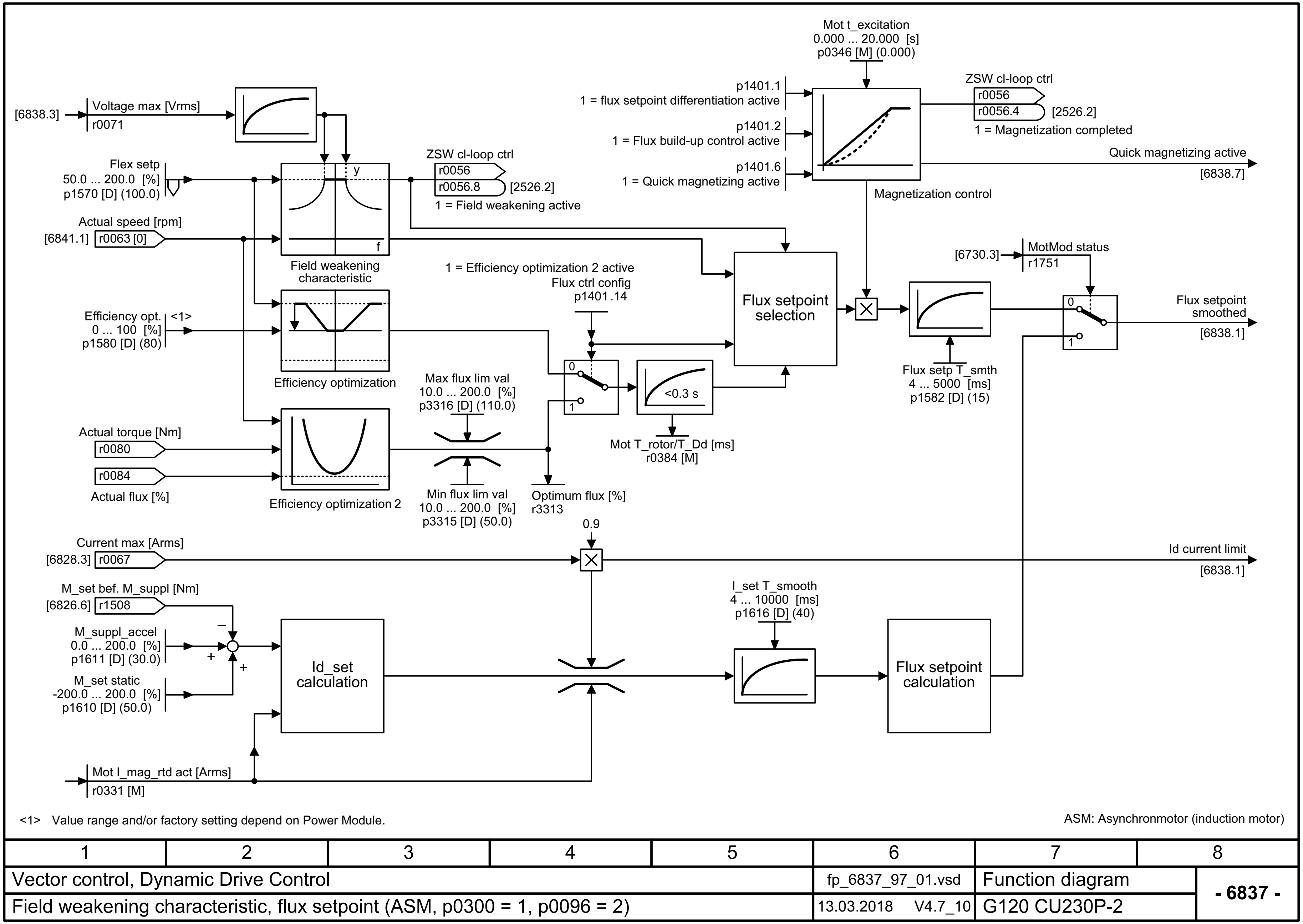
Vector control, Dynamic Drive Control	fp_6835_97_01.vsd	Function diagram	- 6835 -
Id setpoint (RESM, p0300 = 6xx, p0096 = 2)	13.03.2018 V4.7_10	G120 CU230P-2	

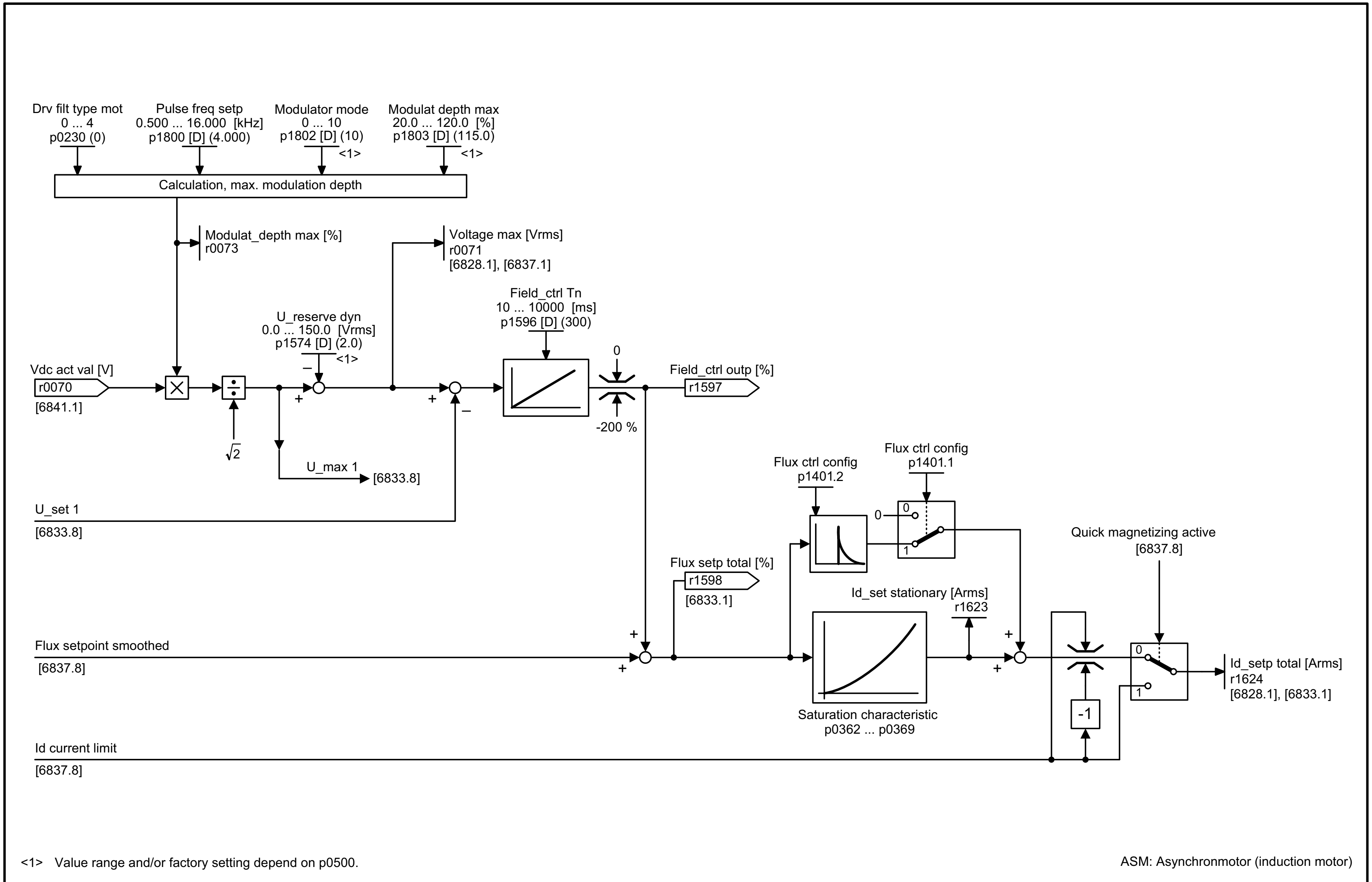
Fig. 3-118 6836 – Id setpoint (PMSM, p0300 = 2xx, p0096 = 2)



1	2	3	4	5	6	7	8
Vector control, Dynamic Drive Control					fp_6836_97_01.vsd	Function diagram	- 6836 -
Id setpoint (PMSM, p0300 = 2xx, p0096 = 2)					13.03.2018 V4.7_10	G120 CU230P-2	

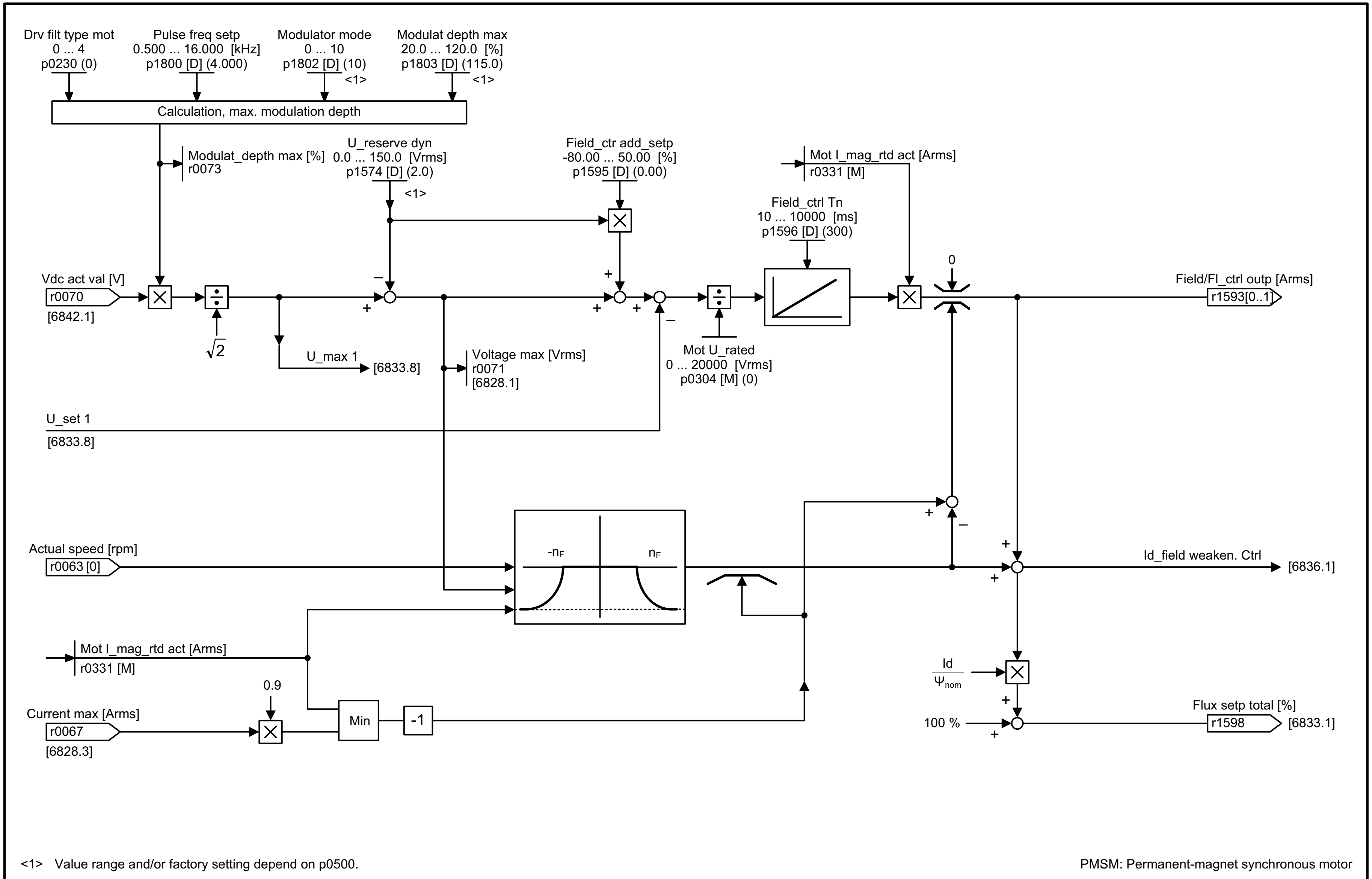
Fig. 3-119 6837 – Field weakening characteristic, flux setpoint (ASM, p0300 = 1, p0096 = 2)





1	2	3	4	5	6	7	8
Vector control, Dynamic Drive Control					fp_6838_97_01.vsd	Function diagram	- 6838 -
Field weakening controller, flux controller, Id setpoint (ASM, p0300 = 1, p0096 = 2)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-120 6838 – Field weakening controller, flux controller, Id setpoint (ASM, p0300 = 1, p0096 = 2)



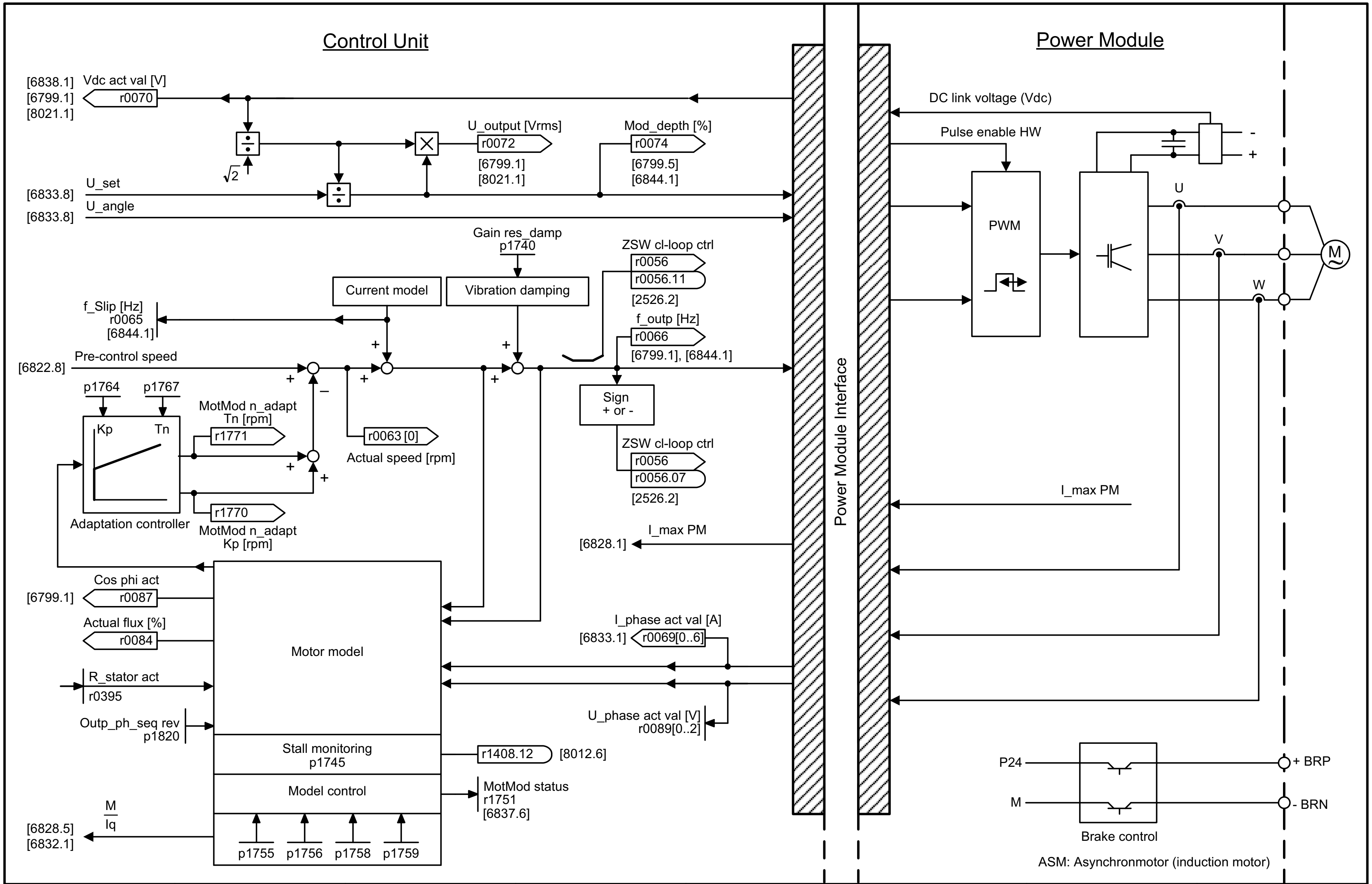
<1> Value range and/or factory setting depend on p0500.

PMSM: Permanent-magnet synchronous motor

1	2	3	4	5	6	7	8

Vector control, Dynamic Drive Control	fp_6839_97_01.vsd	Function diagram	- 6839 -
Field weakening controller (PMSM, p0300 = 2xx, p0096 = 2)	13.03.2018 V4.7_10	G120 CU230P-2	

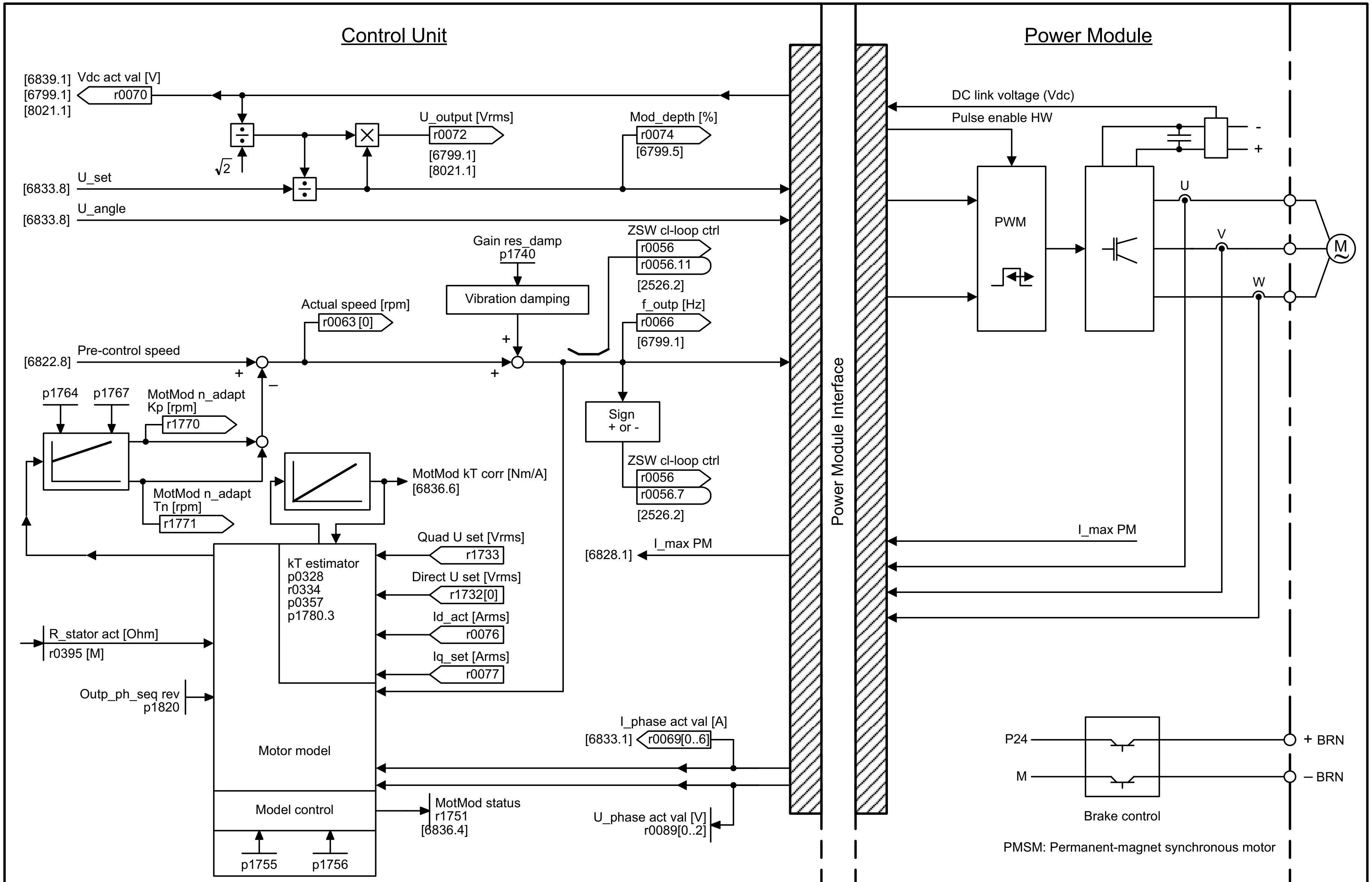
Fig. 3-121 6839 – Field weakening controller (PMSM, p0300 = 2xx, p0096 = 2)



1	2	3	4	5	6	7	8

Vector control, Dynamic Drive Control	fp_6841_97_01.vsd	Function diagram	- 6841 -
Interface to the Power Module (ASM, p0300 = 1, p0096 = 2)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-122 6841 – Interface to the Power Module (ASM, p0300 = 1, p0096 = 2)



1	2	3	4	5	6	7	8

Vector control, Dynamic Drive Control	fp_6842_97_01.vsd	Function diagram	- 6842 -
Interface to the Power Module (PMSM, p0300 = 2xx, p0096 = 2)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-123 6842 – Interface to the Power Module (PMSM, p0300 = 2xx, p0096 = 2)

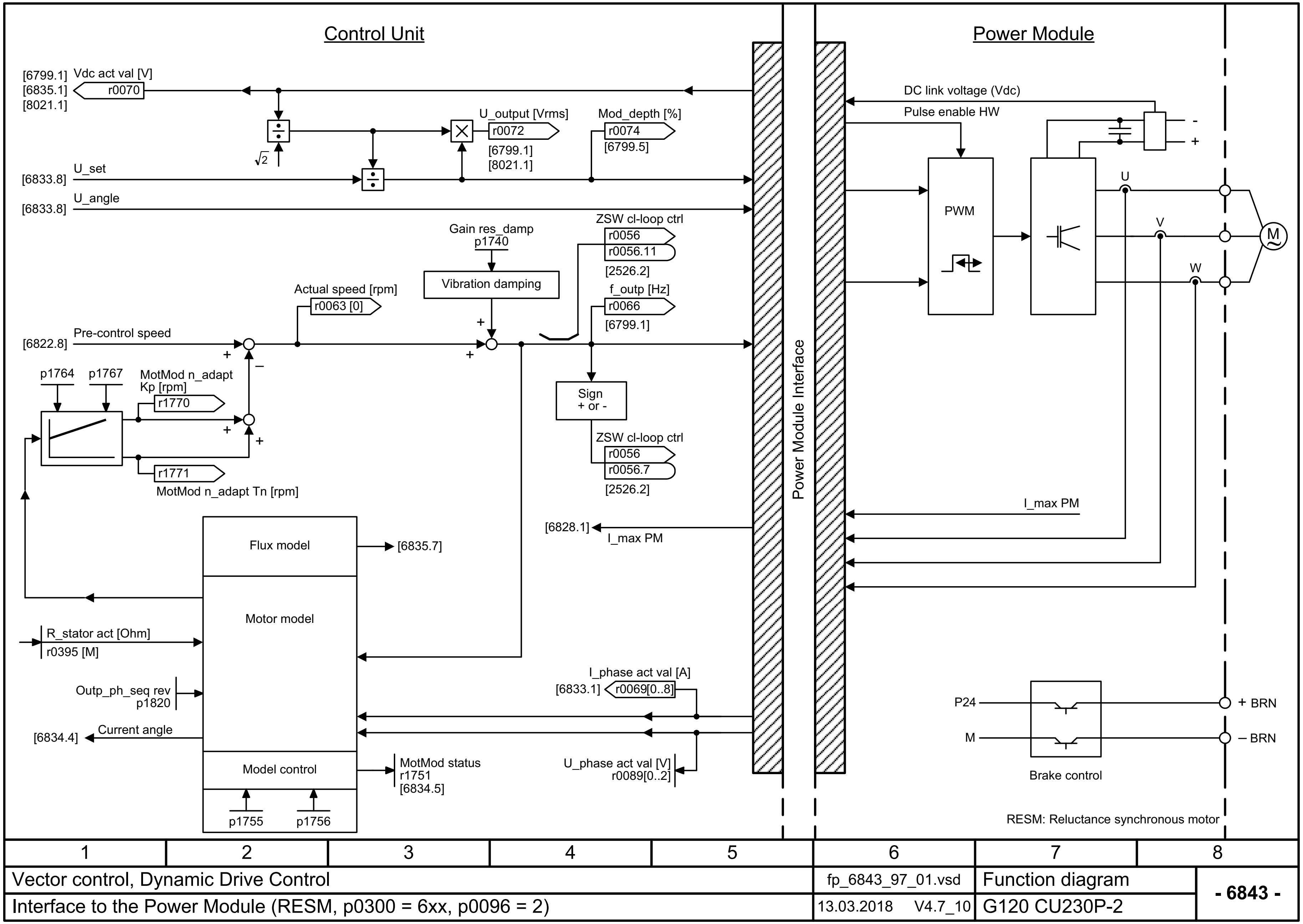
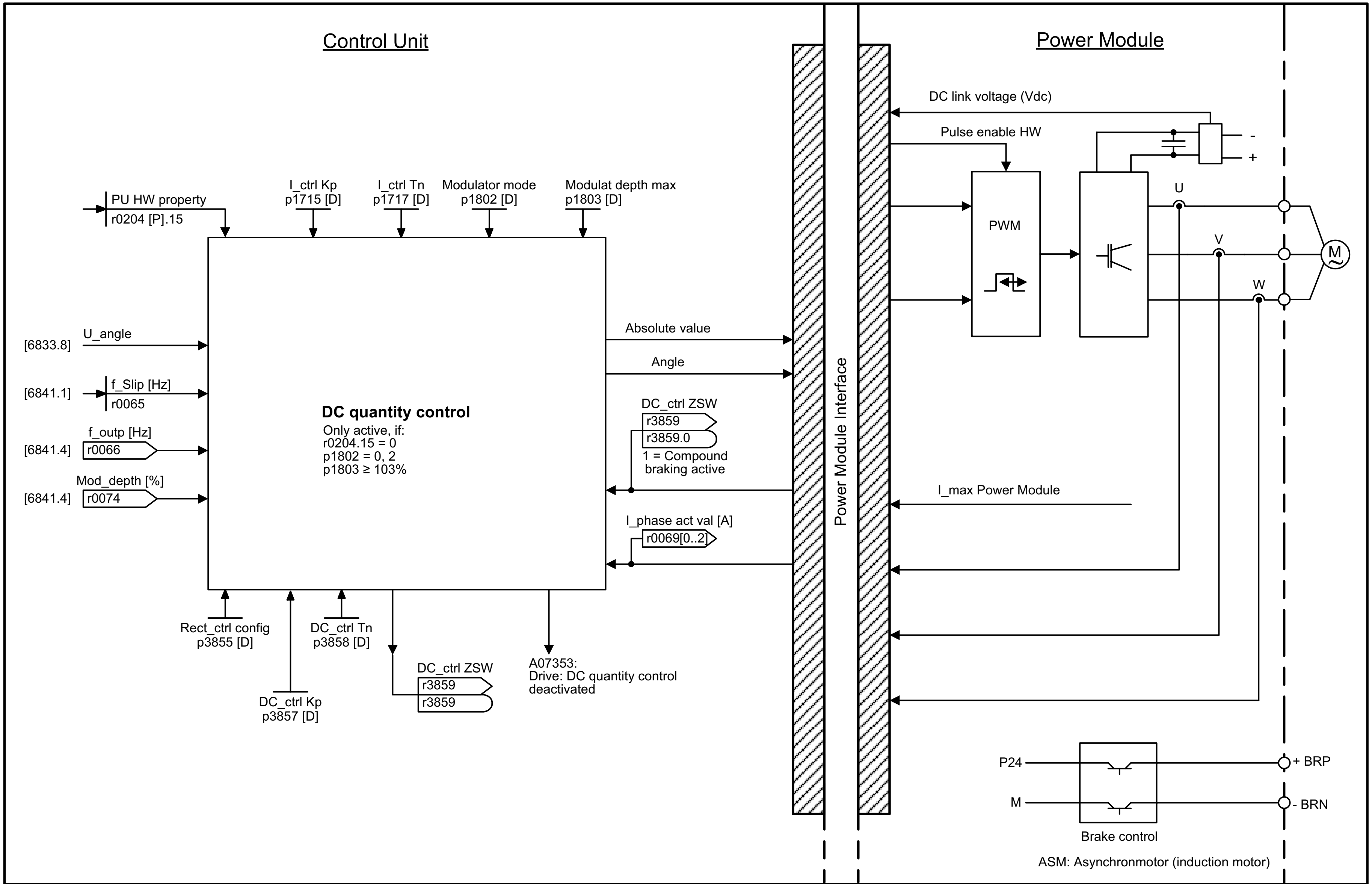


Fig. 3-124 6843 – Interface to the Power Module (RESM, p0300 = 6xx, p0096 = 2)



1	2	3	4	5	6	7	8

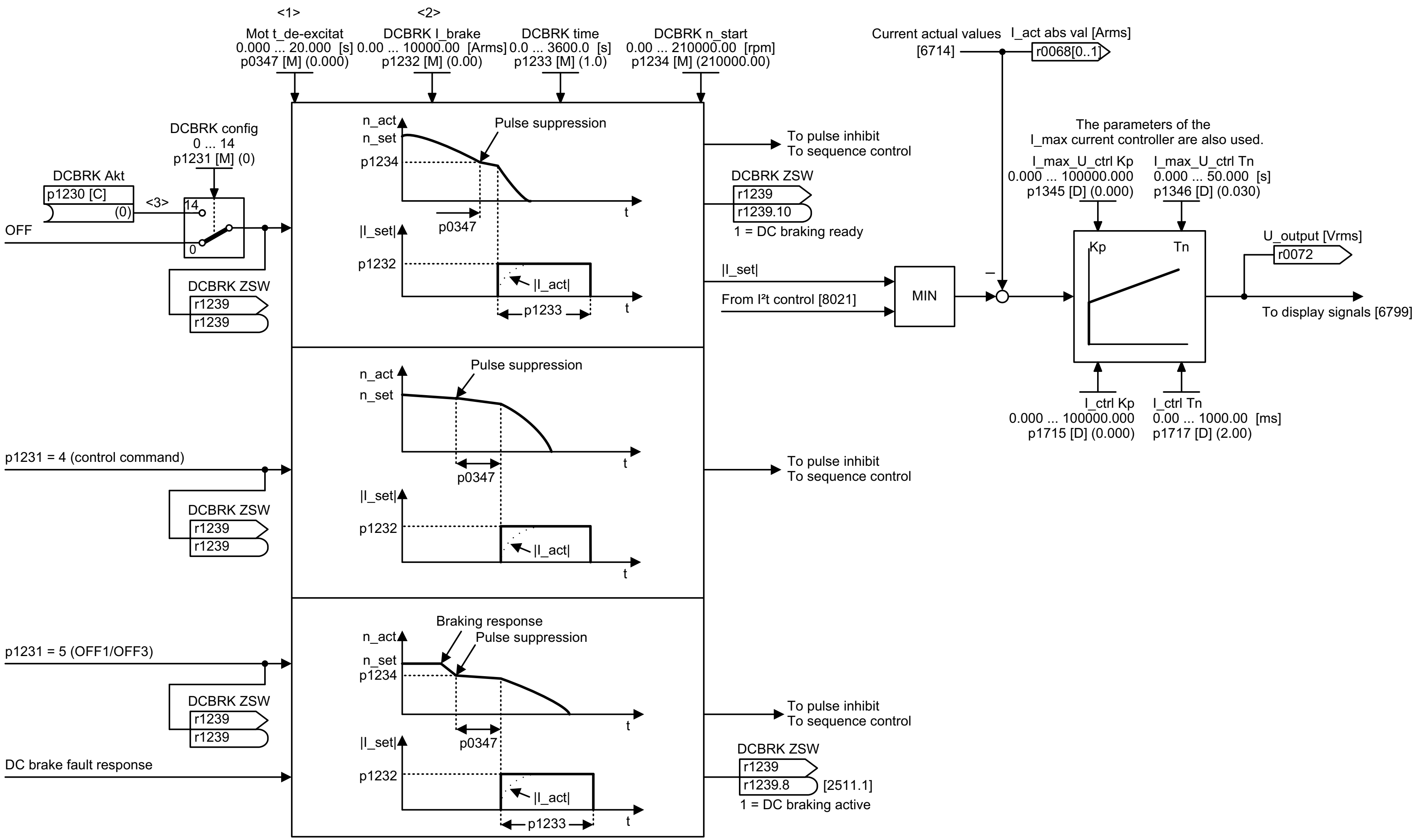
Vector control, Dynamic Drive Control	fp_6844_97_01.vsd	Function diagram	- 6844 -
Closed-loop DC quantity control (ASM, p0300 = 1, PM240, p0096 = 2)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-125 6844 – Closed-loop DC quantity control (ASM, p0300 = 1, PM240, p0096 = 2)

3.13 Technology functions

Function diagrams

Fig. 3-126 7017 – DC braking (ASM, p0300 = 1)



<1> The de-magnetization time is determined during automatic calculation (p0340 = 1, 3).
<2> The DC braking current is determined during automatic calculation (p0340 = 1).
<3> DC braking when starting speed for DC braking (p1234) is fallen below.

1	2	3	4	5	6	7	8
Technology functions					fp_7017_97_51.vsd	Function diagram	- 7017 -
DC braking (ASM, p0300 = 1)					13.03.2018 V4.7_10	G120 CU230P-2	

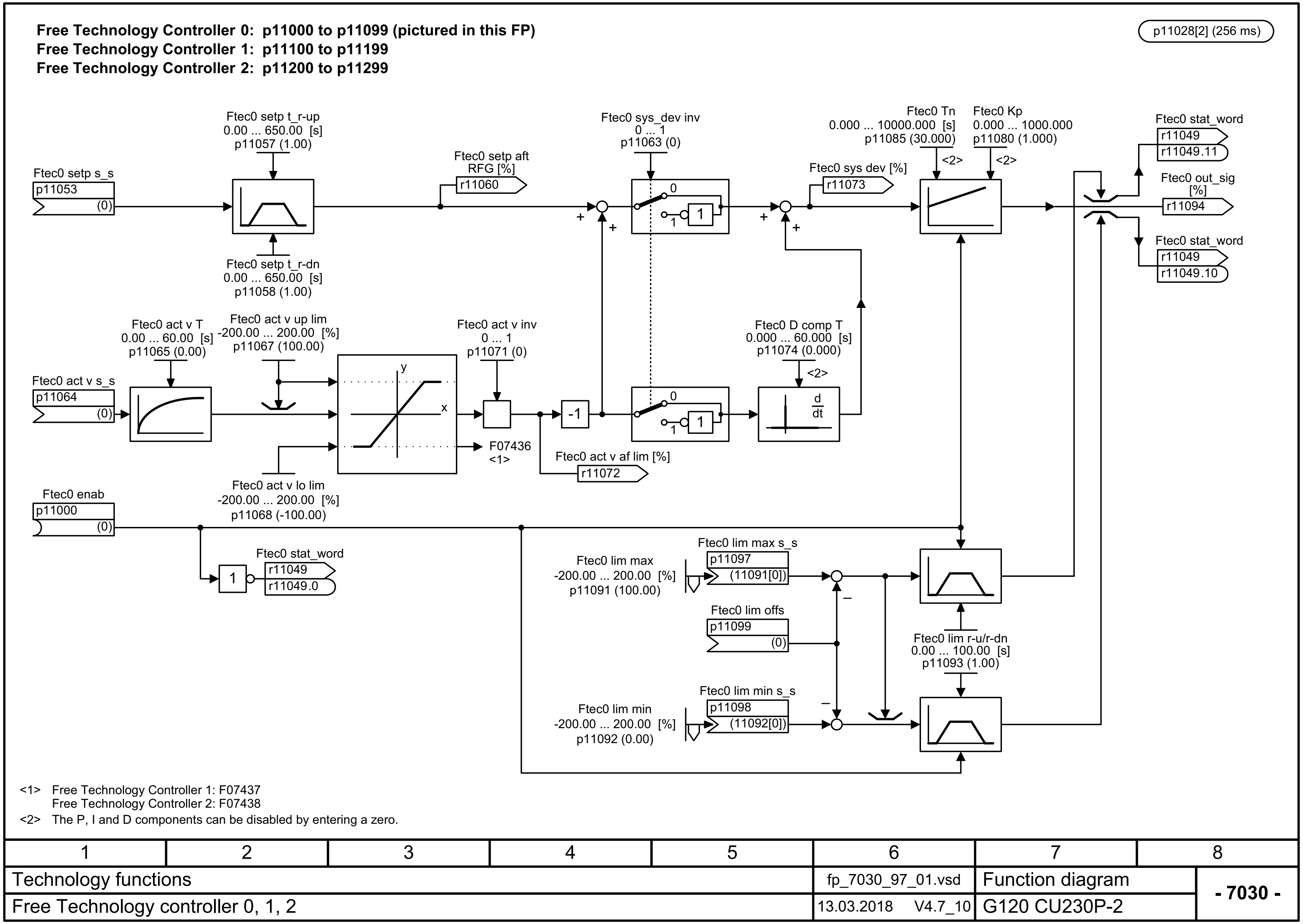
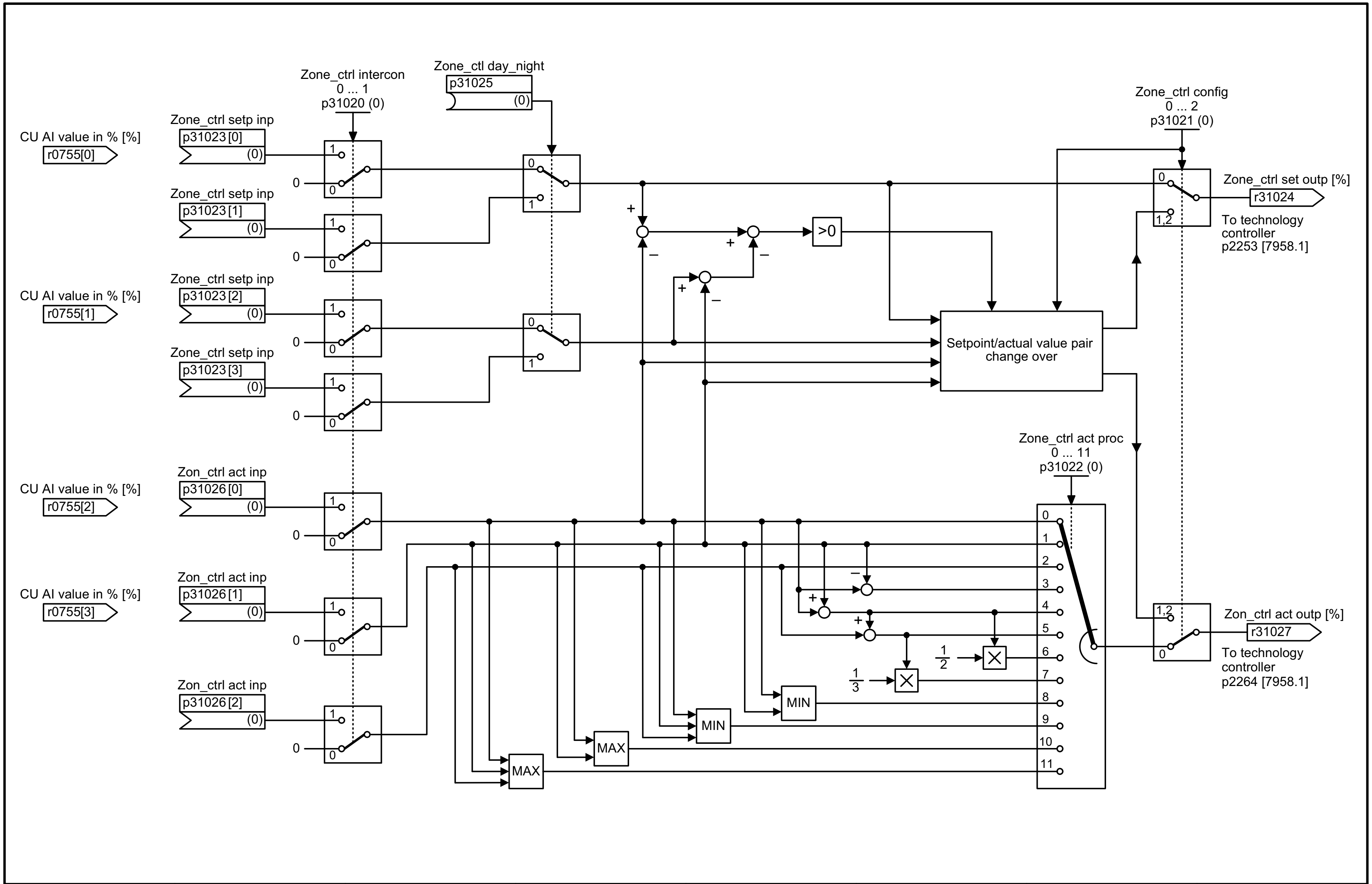
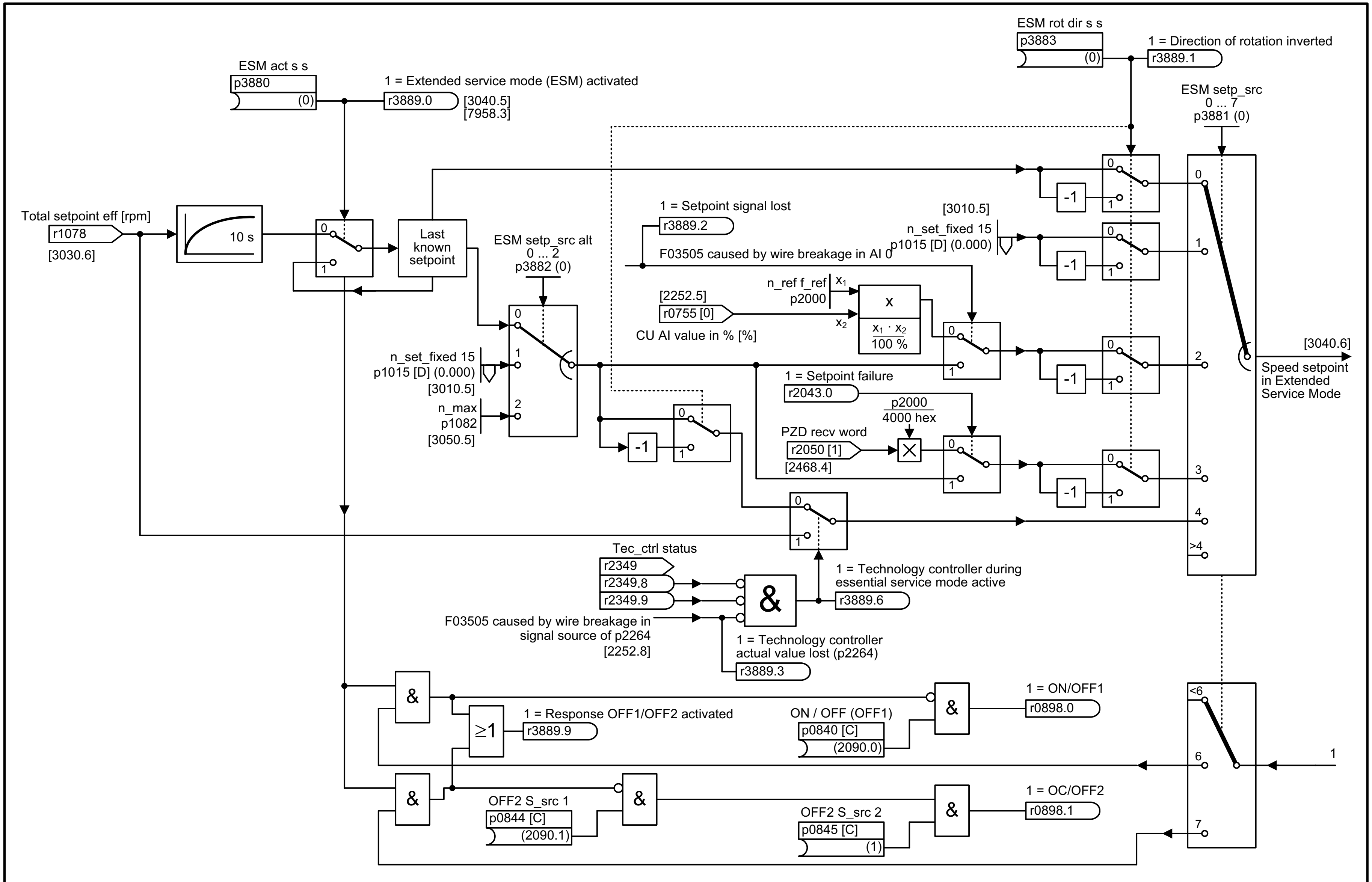


Fig. 3-127 7030 – Free technology controller 0, 1, 2

Fig. 3-128 7032 – Multi-zone control



1	2	3	4	5	6	7	8
Technology functions					fp_7032_97_01.vsd	Function diagram	- 7032 -
Multi Zone Control					13.03.2018 V4.7_10	G120 CU230P-2	

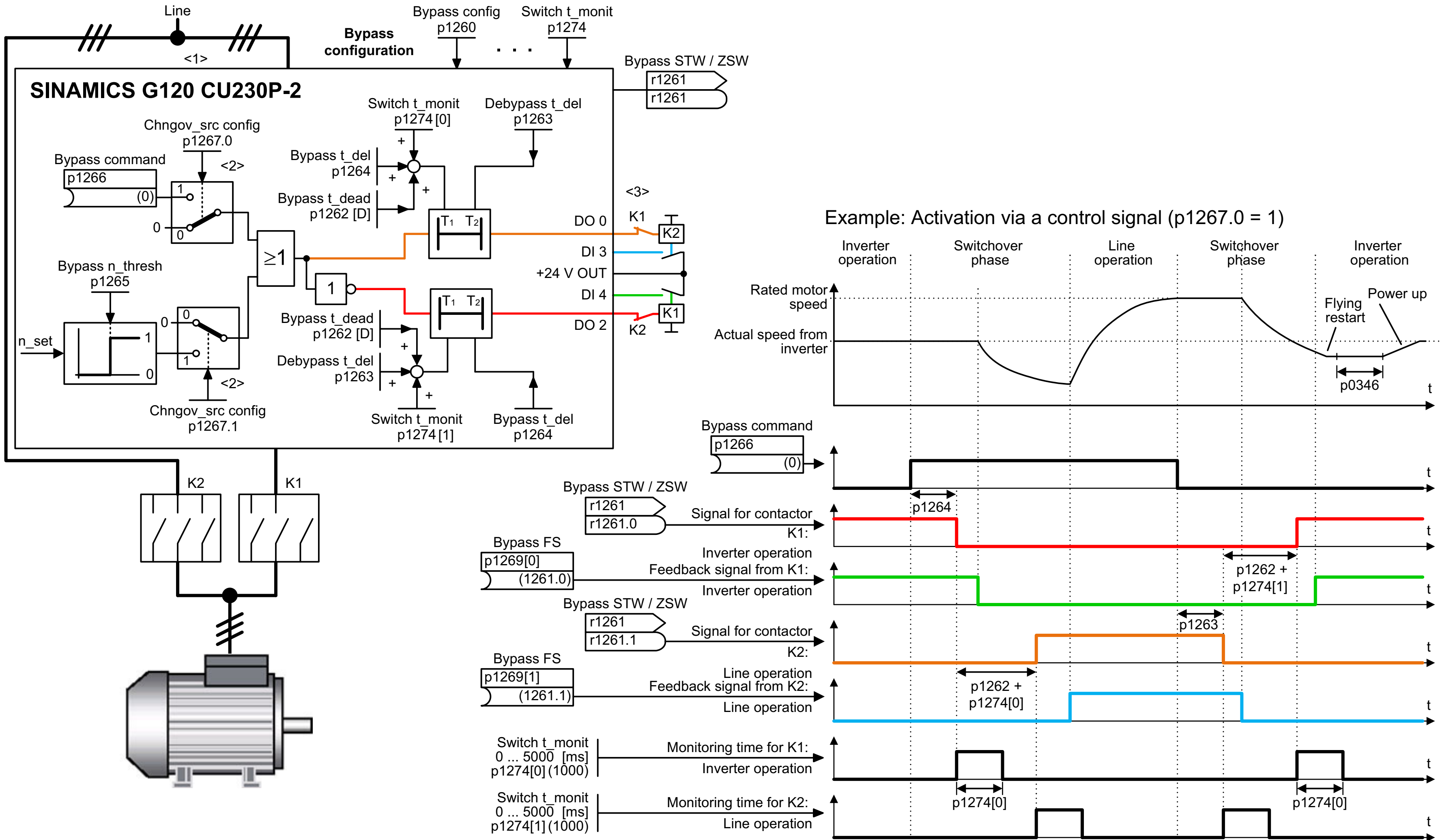


1	2	3	4	5	6	7	8

Technology functions	fp_7033_97_01.vsd	Function diagram	- 7033 -
Essential Service Mode (ESM)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-129 7033 – Essential service mode (ESM)

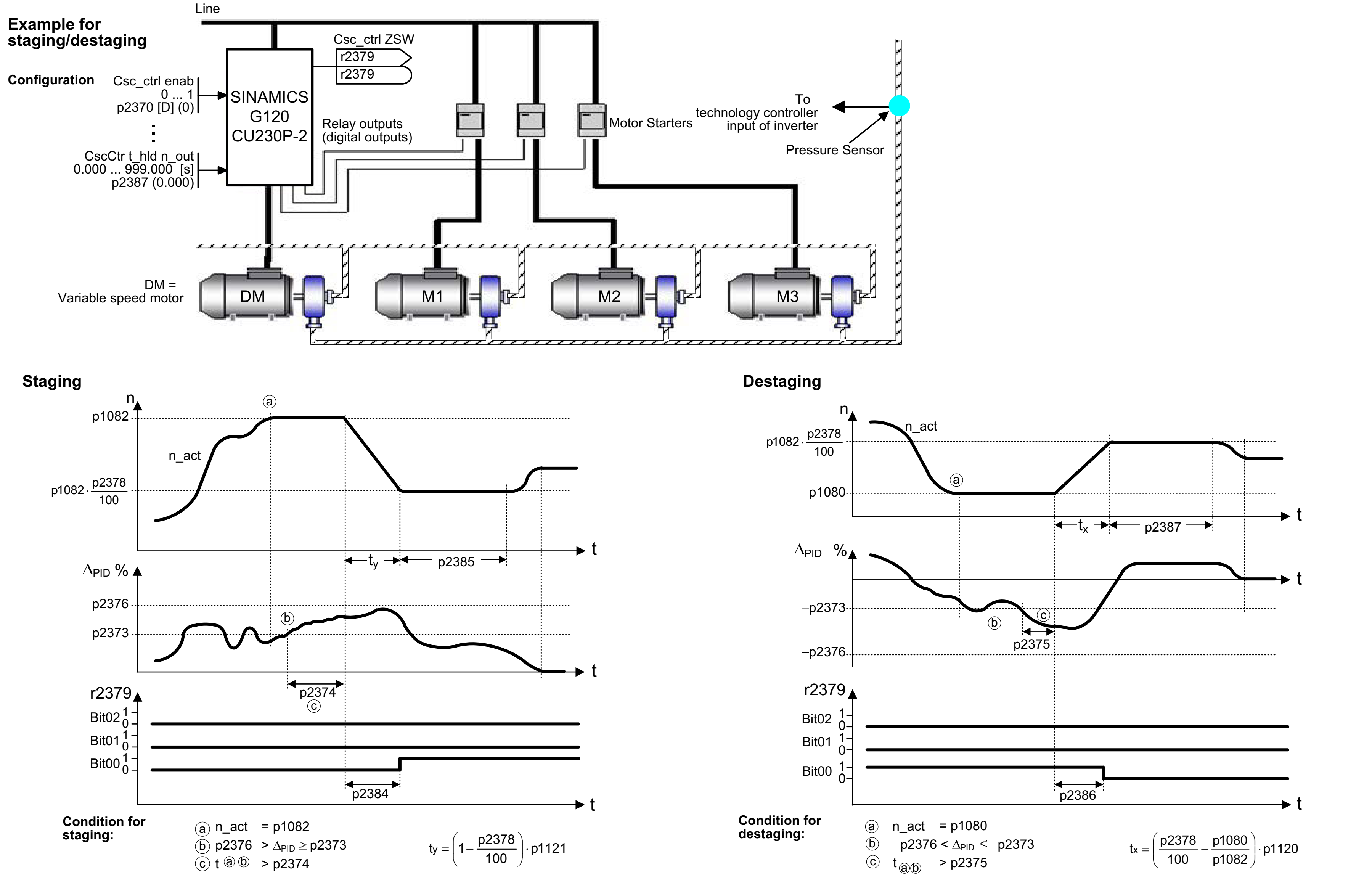
Fig. 3-130 7035 – Bypass



<1> Flying restart must be activated for the bypass function (p1200 = 1 or 4).
<2> The following options are possible for bypass function:
Bypass function when activating via a control signal (p1267.0 = 1).
Bypass function depending on the speed (p1267.1 = 1).
<3> Contactors K1 and K2 must be mutually interlocked so that they cannot close at the same time.

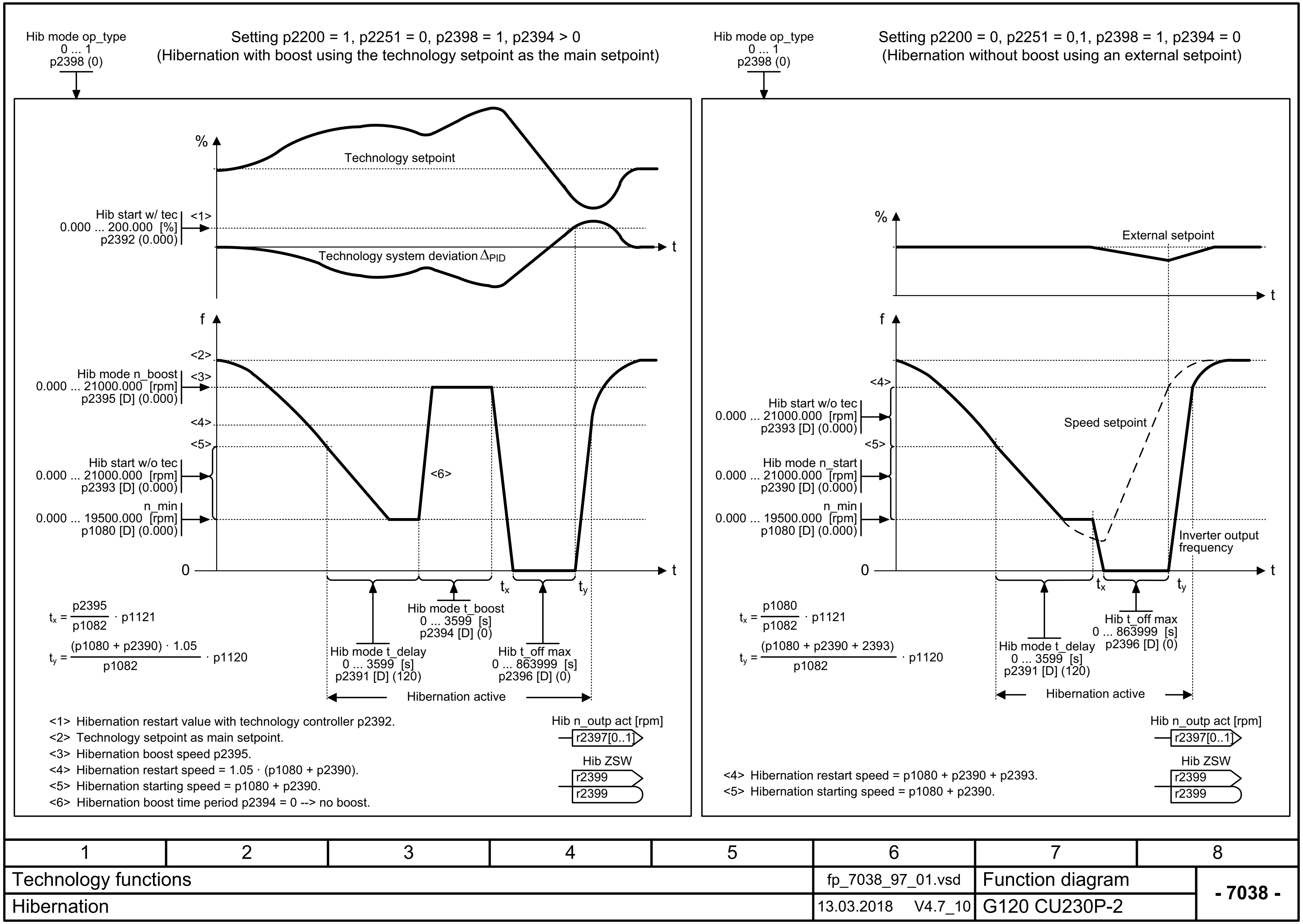
1	2	3	4	5	6	7	8
Technology functions					fp_7035_97_01.vsd	Function diagram	- 7035 -
Bypass					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-131 7036 – Staging



1	2	3	4	5	6	7	8
Technology functions					fp_7036_97_01.vsd	Function diagram	- 7036 -
Staging					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-132 7038 – Hibernation



3.14 Free function blocks

Function diagrams

Fig. 3-133 7200 – Sampling times of the runtime groups

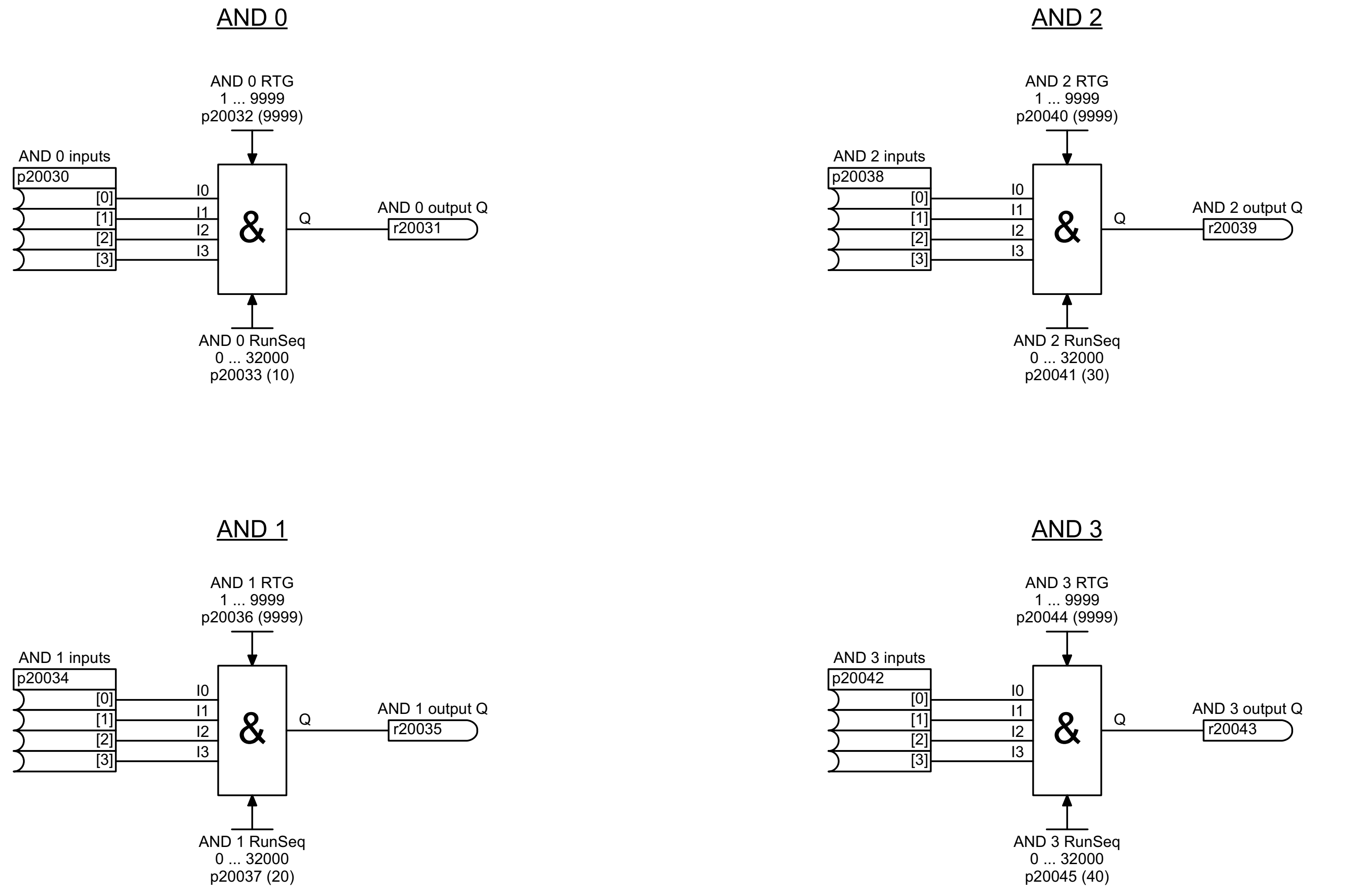
	Run-time group					
	1	2	3	4	5	6
	r20001[1] = 8 ms	r20001[2] = 16 ms	r20001[3] = 32 ms	r20001[4] = 64 ms	r20001[5] = 128 ms	r20001[6] = 256 ms
Logic function blocks AND, OR, XOR, NOT	X	X	X	X	X	X
Arithmetic function blocks ADD, SUB, MUL, DIV, AVA, NCM, PLI	-	-	-	-	X	X
Time function blocks MFP, PCL, PDE, 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

RTG sampling time [ms]
r20001[0..9]

1	2	3	4	5	6	7	8
Free Function Blocks					fp_7200_97_61.vsd	Function diagram	- 7200 -
Sampling times of the runtime groups					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-134 7210 – AND 0 ... 3

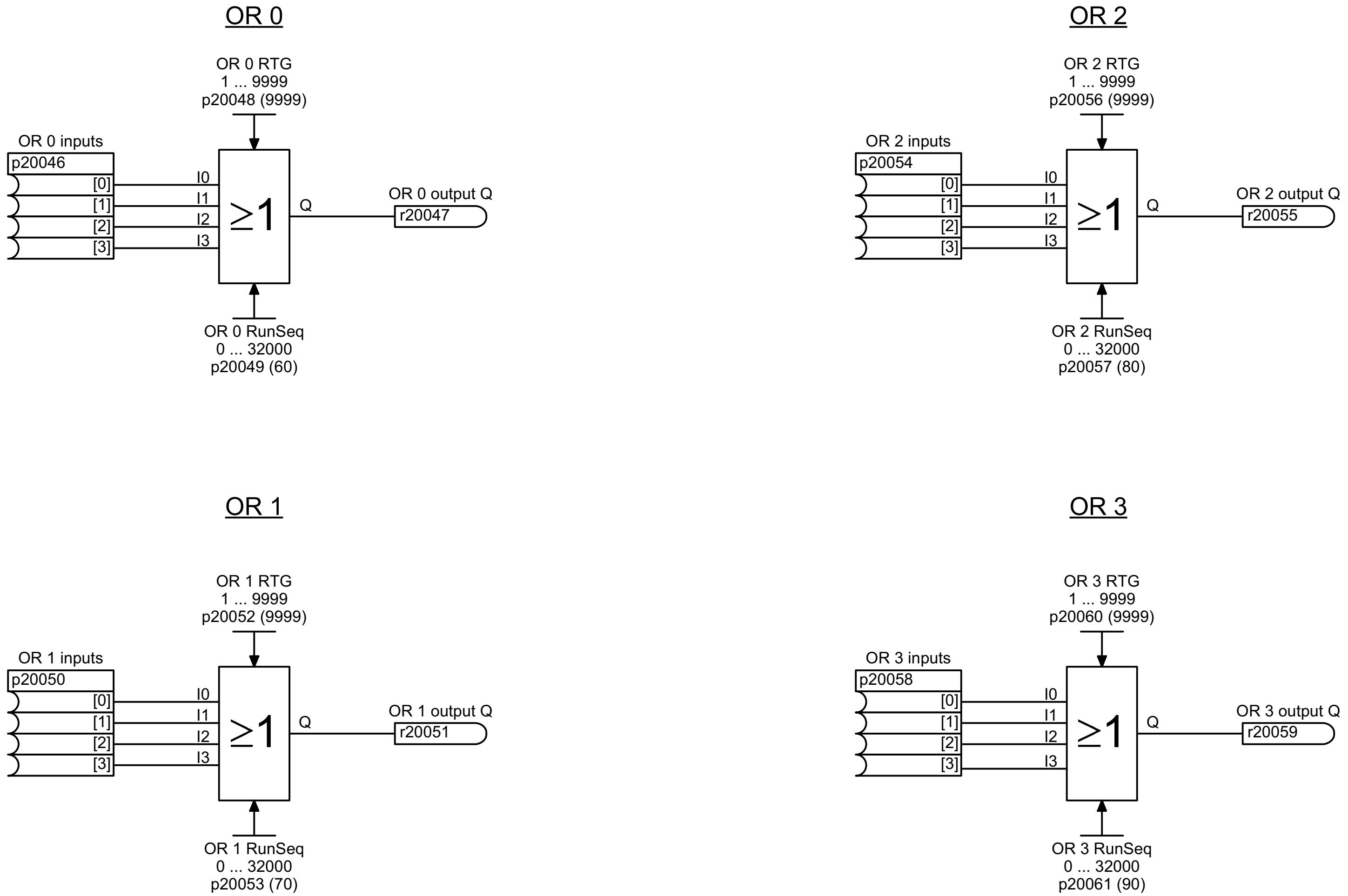
AND (AND function blocks)



1	2	3	4	5	6	7	8
Free function blocks - Logic function blocks					fp_7210_97_61.vsd	Function diagram	- 7210 -
AND 0 … 3					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-135 7212 – OR 0 ... 3

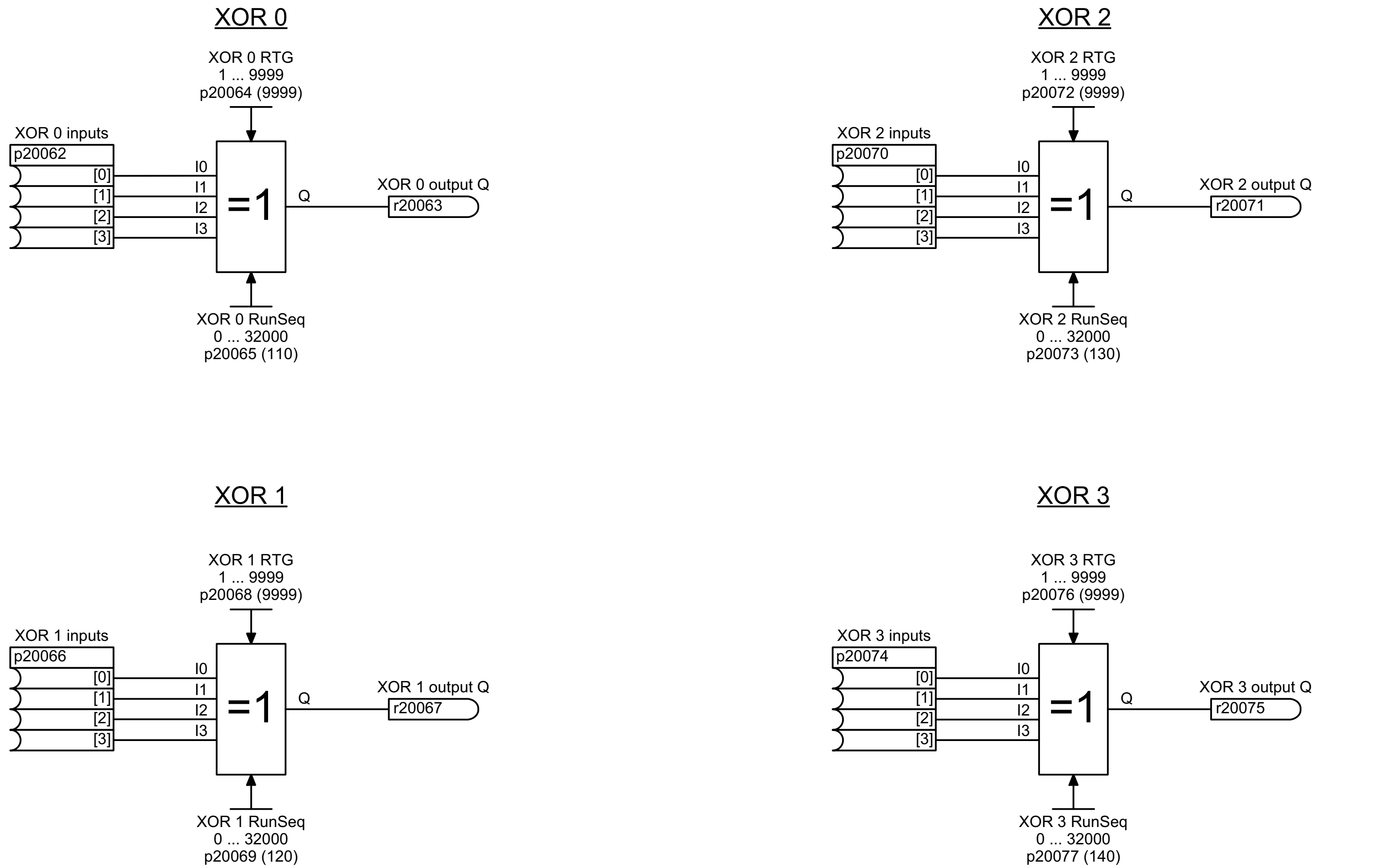
OR (OR function blocks)



1	2	3	4	5	6	7	8

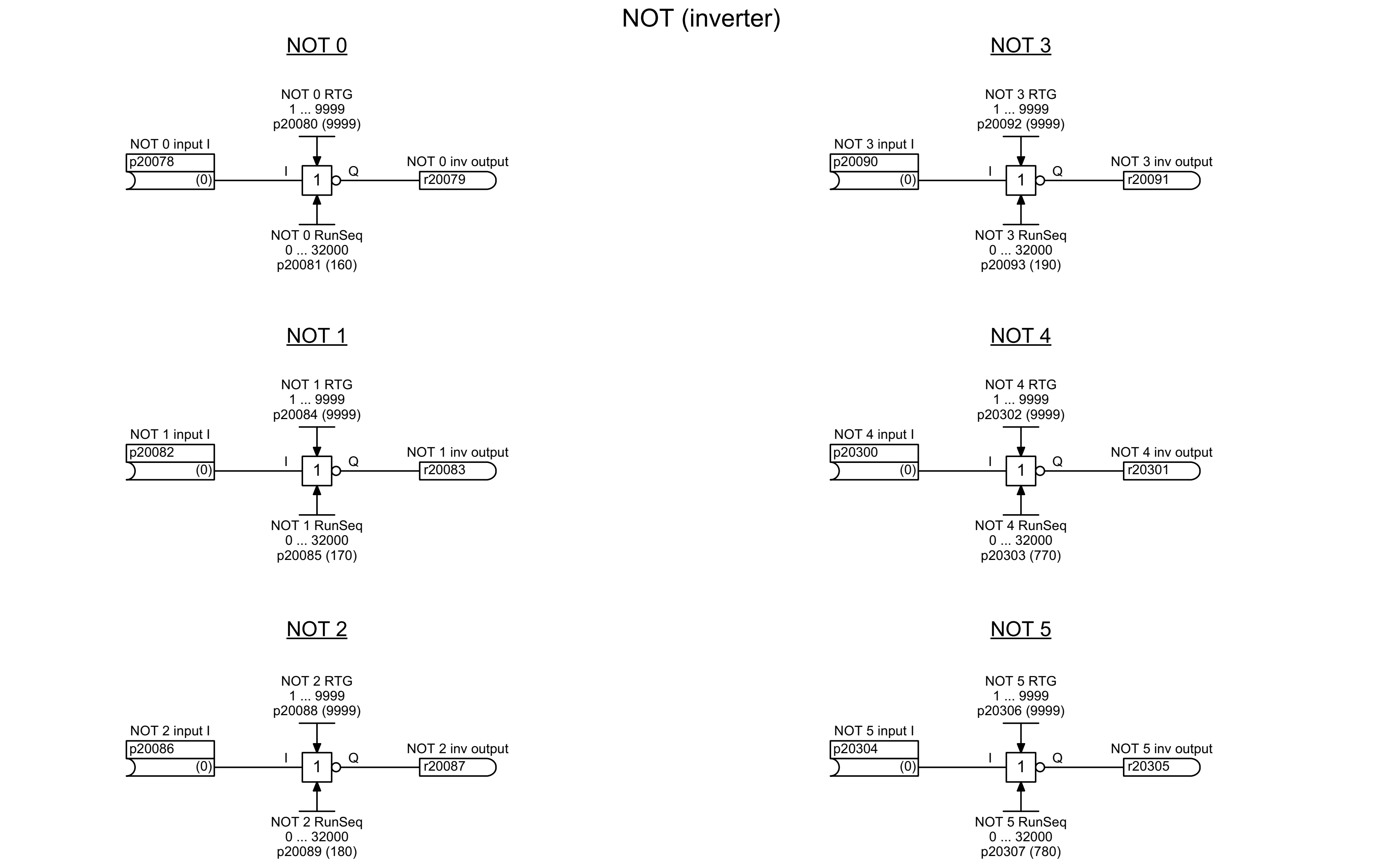
Free function blocks - Logic function blocks	fp_7212_97_61.vsd	Function diagram	- 7212 -
OR 0 … 3	13.03.2018 V4.7_10	G120 CU230P-2	

XOR (XOR function blocks)



1	2	3	4	5	6	7	8
Free function blocks - Logic function blocks					fp_7214_97_61.vsd	Function diagram	- 7214 -
XOR 0 … 3					13.03.2018 V4.7_10	G120 CU230P-2	

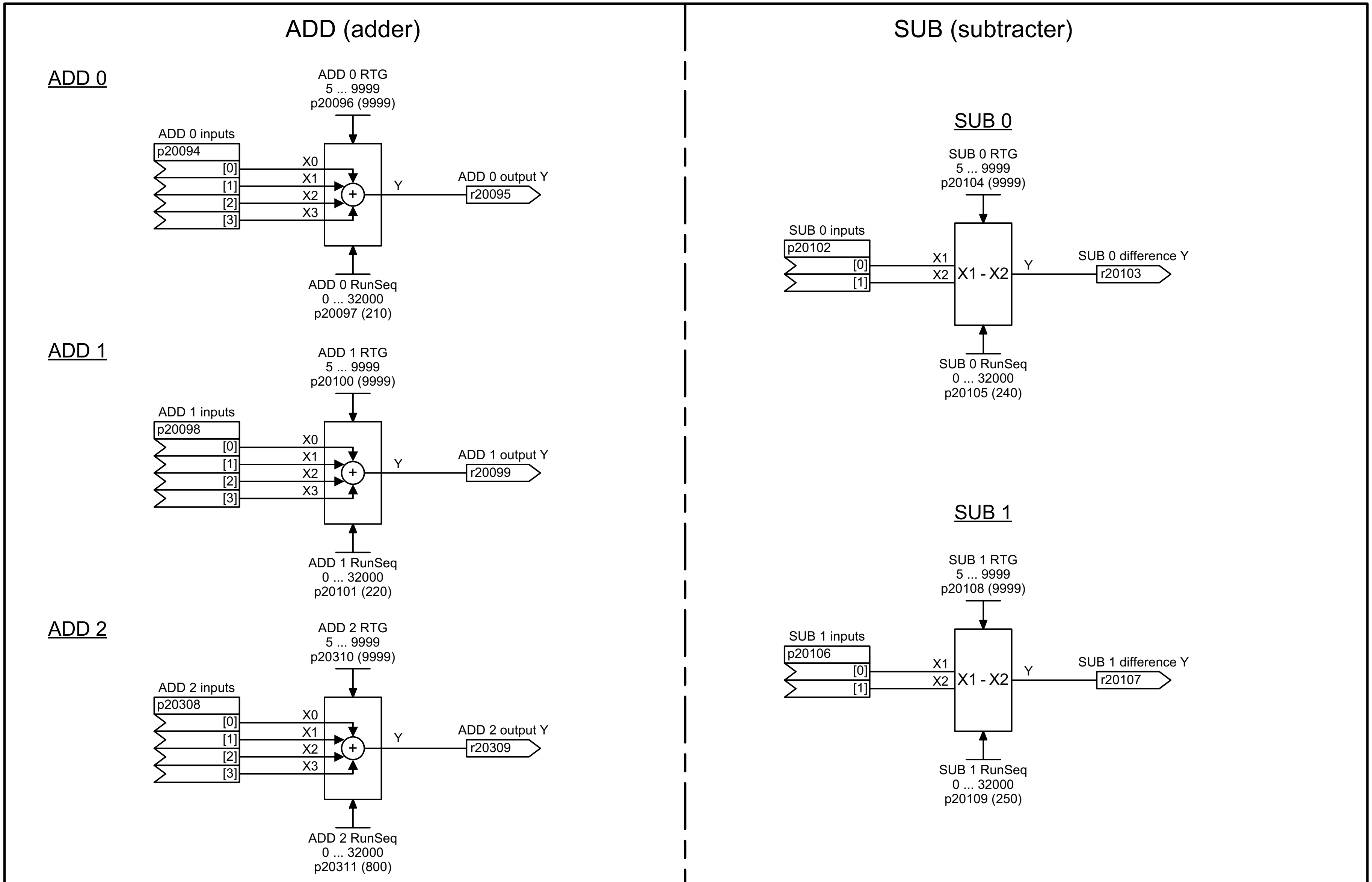
Fig. 3-136 7214 – XOR 0 ... 3



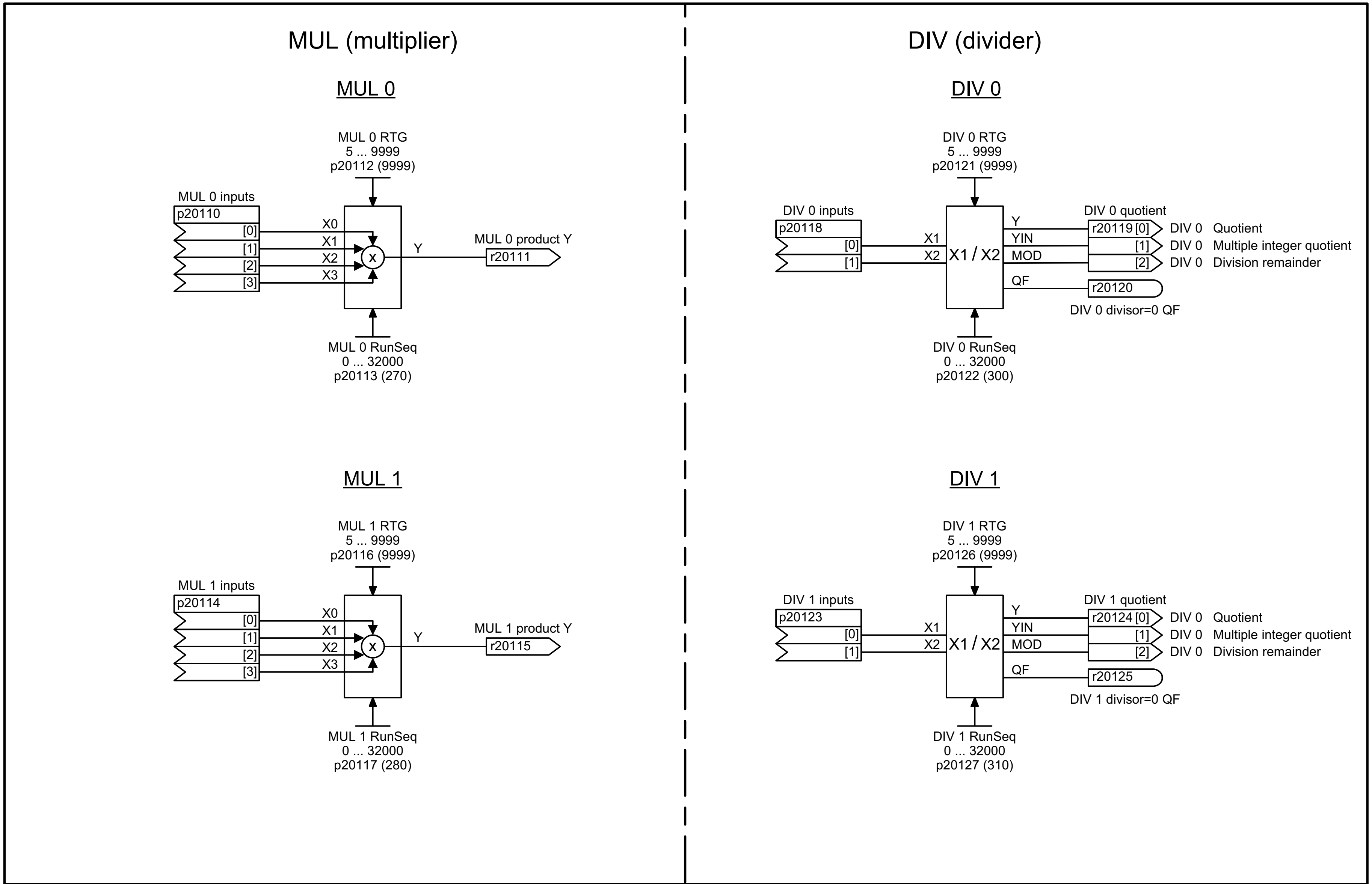
1	2	3	4	5	6	7	8
Free function blocks - Logic function blocks					fp_7216_97_61.vsd	Function diagram	- 7216 -
NOT 0 … 5					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-137 7216 – NOT 0 ... 5

Fig. 3-138 7220 – ADD 0 ... 2, SUB 0 ... 1



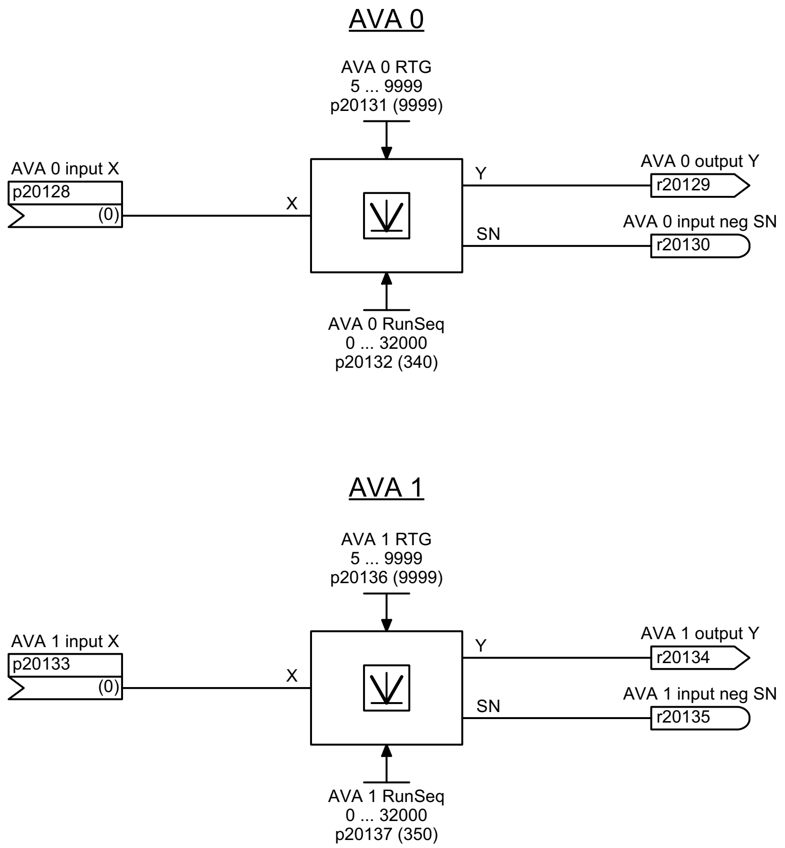
1	2	3	4	5	6	7	8
Free function blocks - Arithmetic function blocks					fp_7220_97_61.vsd	Function diagram	- 7220 -
ADD 0 … 2, SUB 0 … 1					13.03.2018 V4.7_10	G120 CU230P-2	



1	2	3	4	5	6	7	8
Free function blocks - Arithmetic function blocks					fp_7222_97_61.vsd	Function diagram	- 7222 -
MUL 0 … 1, DIV 0 … 1					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-139 7222 – MUL 0 ... 1, DIV 0 ... 1

AVA (absolute value generator)

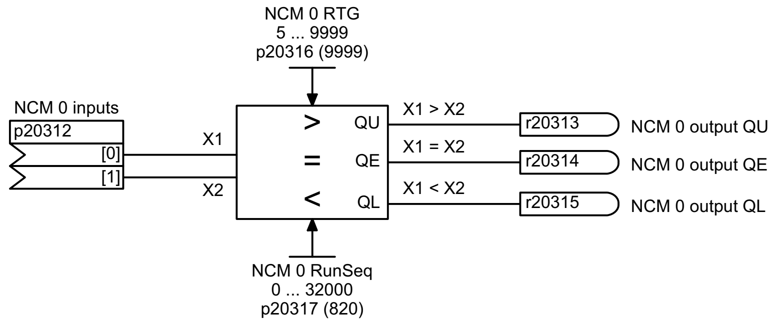


1	2	3	4	5	6	7	8
Free function blocks - Arithmetic function blocks					fp_7224_97_61.vsd	Function diagram	- 7224 -
AVA 0 … 1					13.03.2018 V4.7_10	G120 CU230P-2	

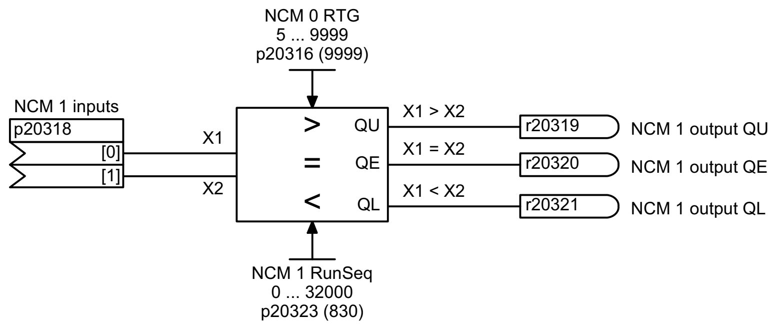
Fig. 3-140 7224 – AVA 0 ... 1

NCM (numeric comparator)

NCM 0



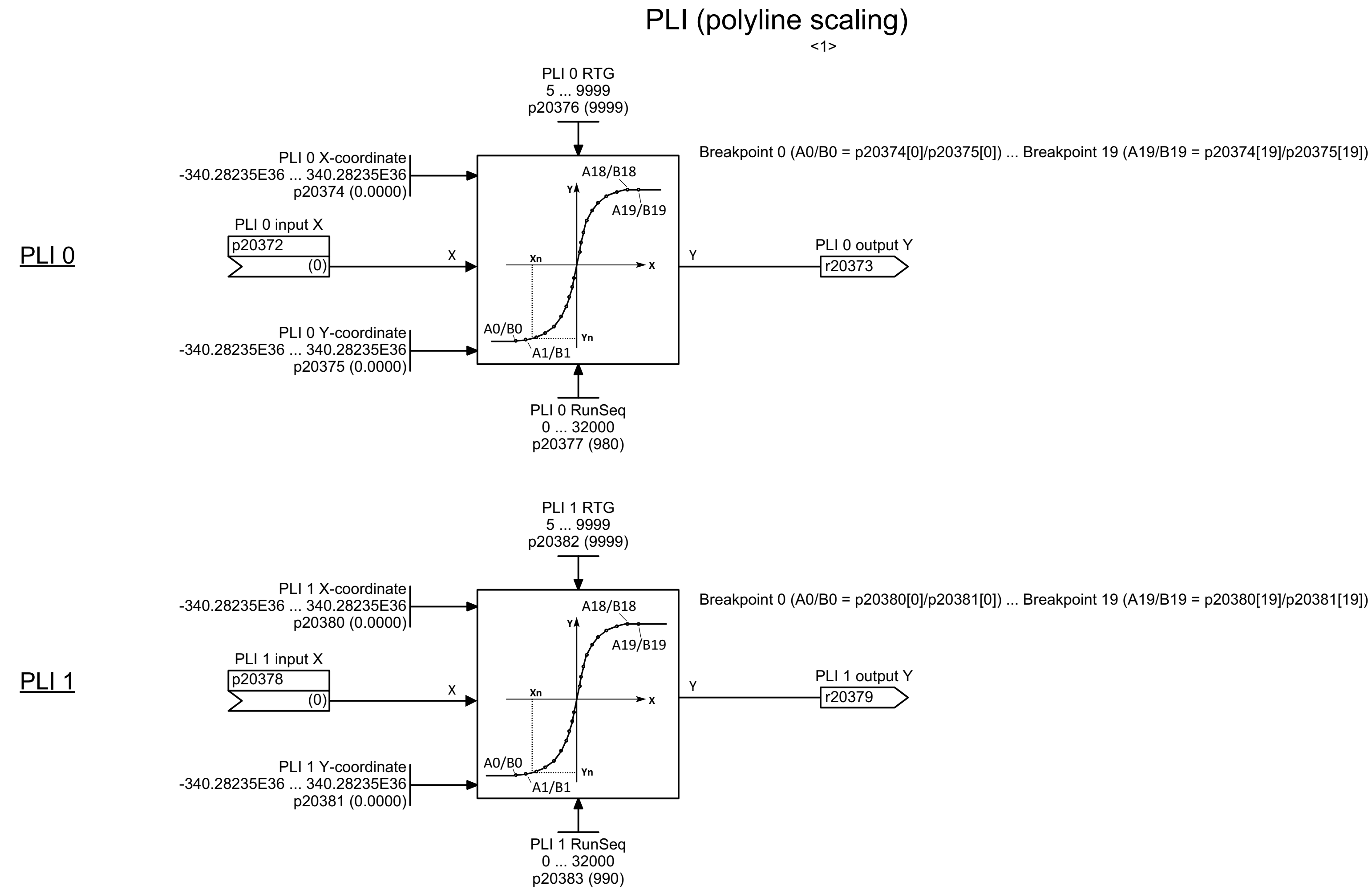
NCM 1



1	2	3	4	5	6	7	8
Free function blocks - Arithmetic function blocks					fp_7225_97_61.vsd	Function diagram	- 7225 -
NCM 0 … 1					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-141 7225 – NCM 0 ... 1

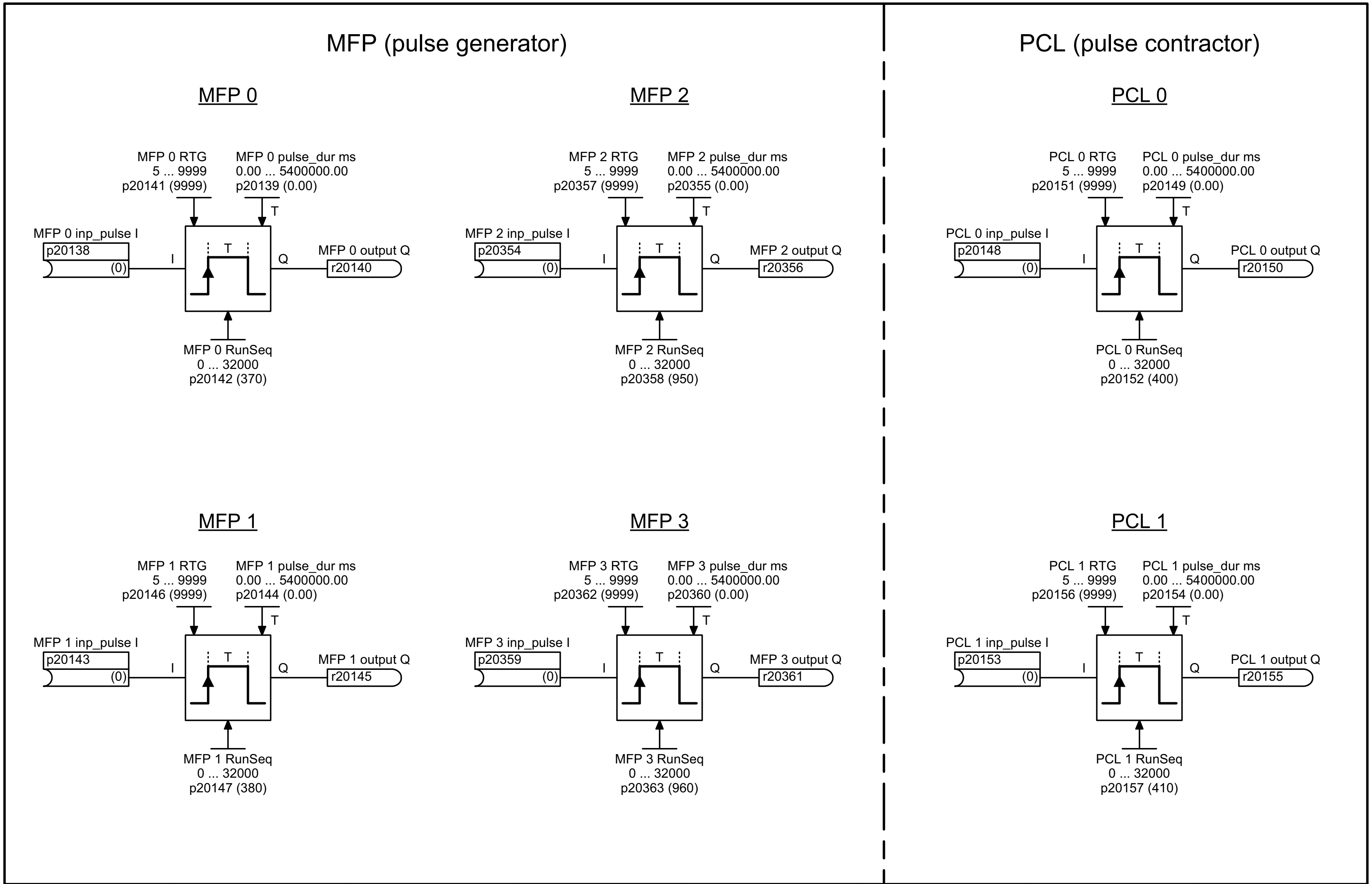
Fig. 3-142 7226 – PLI 0 ... 1



<1> This function block randomly adapts output variable Y to input variable X by means of up to 20 breakpoints in 4 quadrants.
Interpolation is carried out linearly between the breakpoints. Outlying the area A0 to A19, the characteristic curve runs horizontally.
During configuration, you must ensure that the values of A0 to A19 are arranged in ascending order. Otherwise the values at the output will not be correct. The values B0 to B19 can be selected at random, i.e., independently of the previous value.
If breakpoints are not needed (e.g., A16/B16 and higher), the following values of the X- and Y-coordinates (A16/B16 to A19/B19) must be assigned the same values as A15/B15.

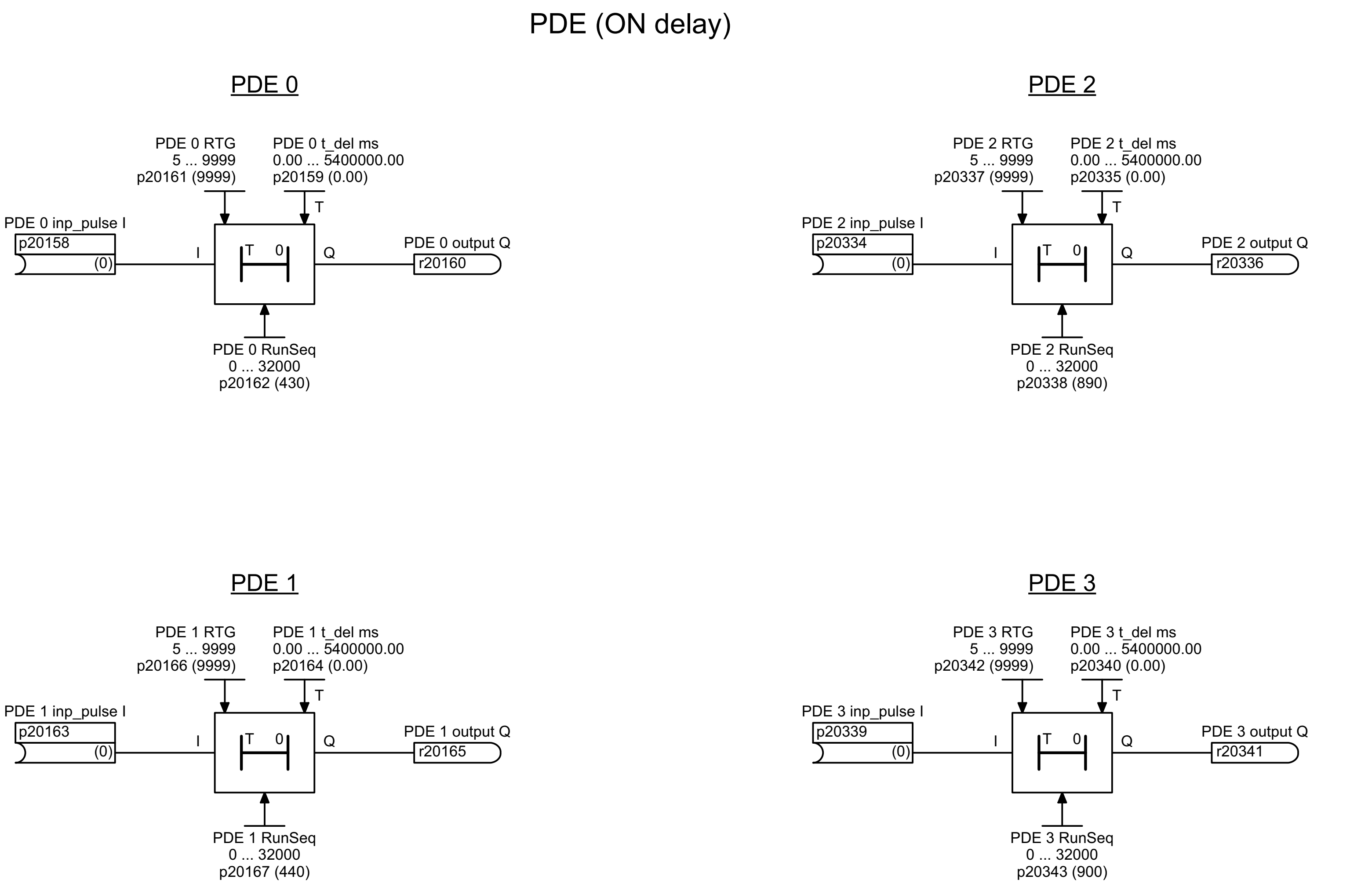
1	2	3	4	5	6	7	8
Free function blocks - Arithmetic function blocks					fp_7226_97_61.vsd	Function diagram	- 7226 -
PLI 0 … 1					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-143 7230 – MFP 0 ... 3, PCL 0 ... 1



1	2	3	4	5	6	7	8
Free function blocks - Time function blocks					fp_7230_97_61.vsd	Function diagram	- 7230 -
MFP 0 … 3, PCL 0 … 1					13.03.2018 V4.7_10	G120 CU230P-2	

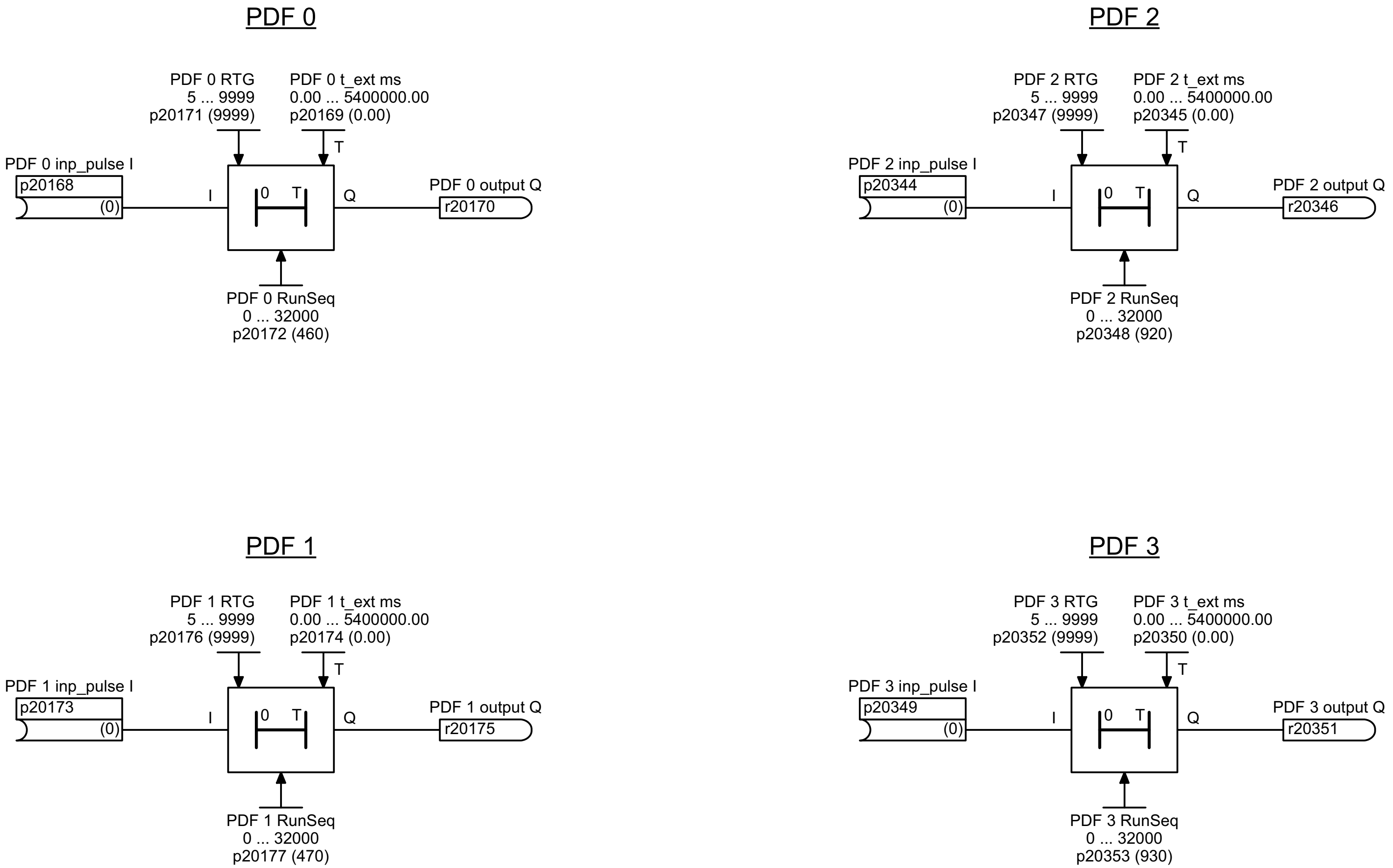
Fig. 3-144 7232 – PDE 0 ... 3



1	2	3	4	5	6	7	8

Free function blocks - Time function blocks	fp_7232_97_61.vsd	Function diagram	- 7232 -
PDE 0 … 3	13.03.2018 V4.7_10	G120 CU230P-2	

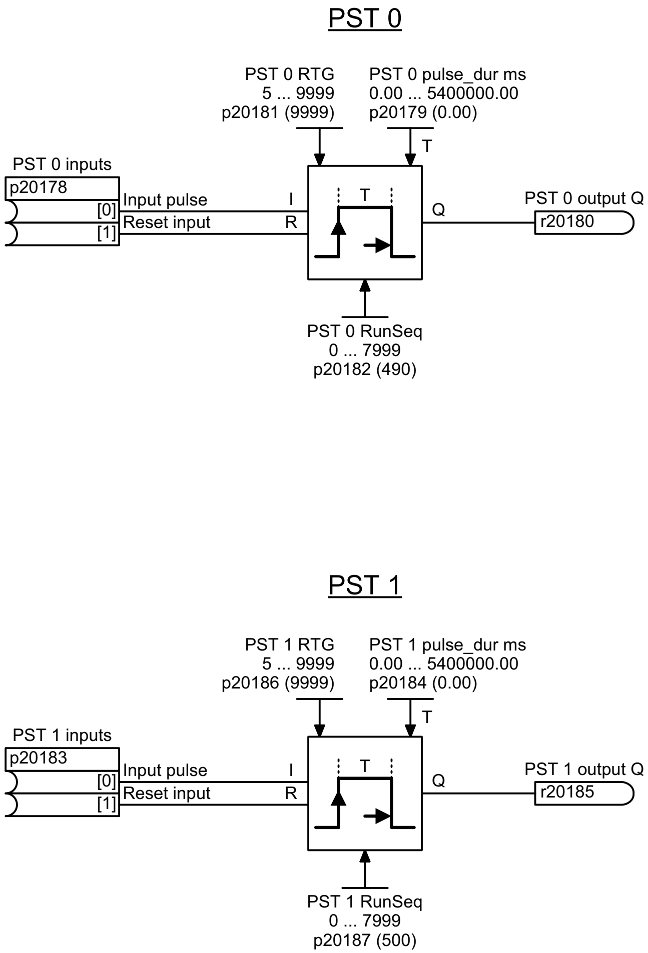
PDF (OFF delay)



1	2	3	4	5	6	7	8
Free function blocks - Time function blocks					fp_7233_97_61.vsd	Function diagram	- 7233 -
PDF 0 … 3					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-145 7233 – PDF 0 ... 3

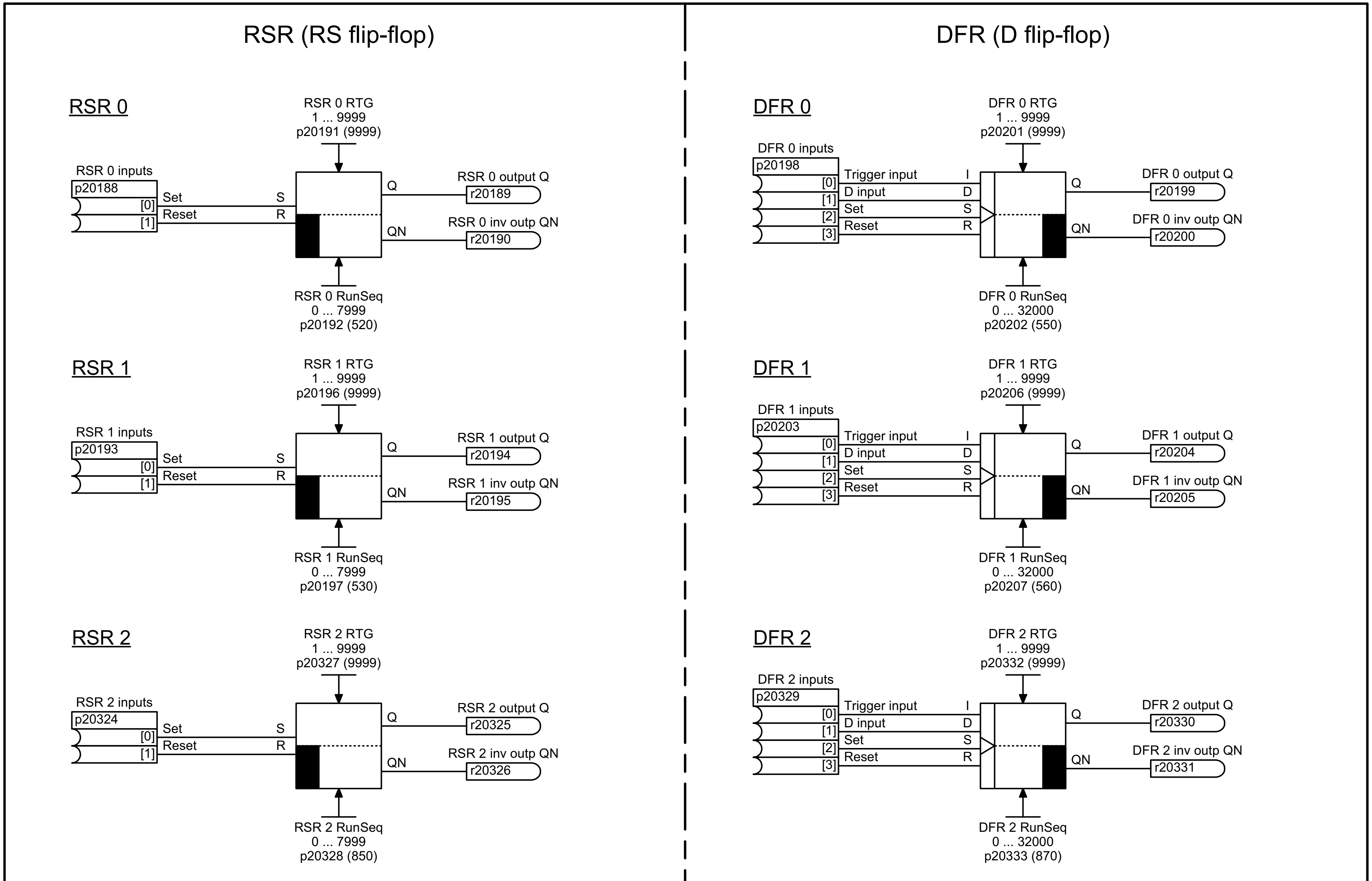
PST (pulse stretcher)



1	2	3	4	5	6	7	8
Free function blocks - Time function blocks					fp_7234_97_61.vsd	Function diagram	- 7234 -
PST 0 … 1					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-146 7234 – PST 0 … 1

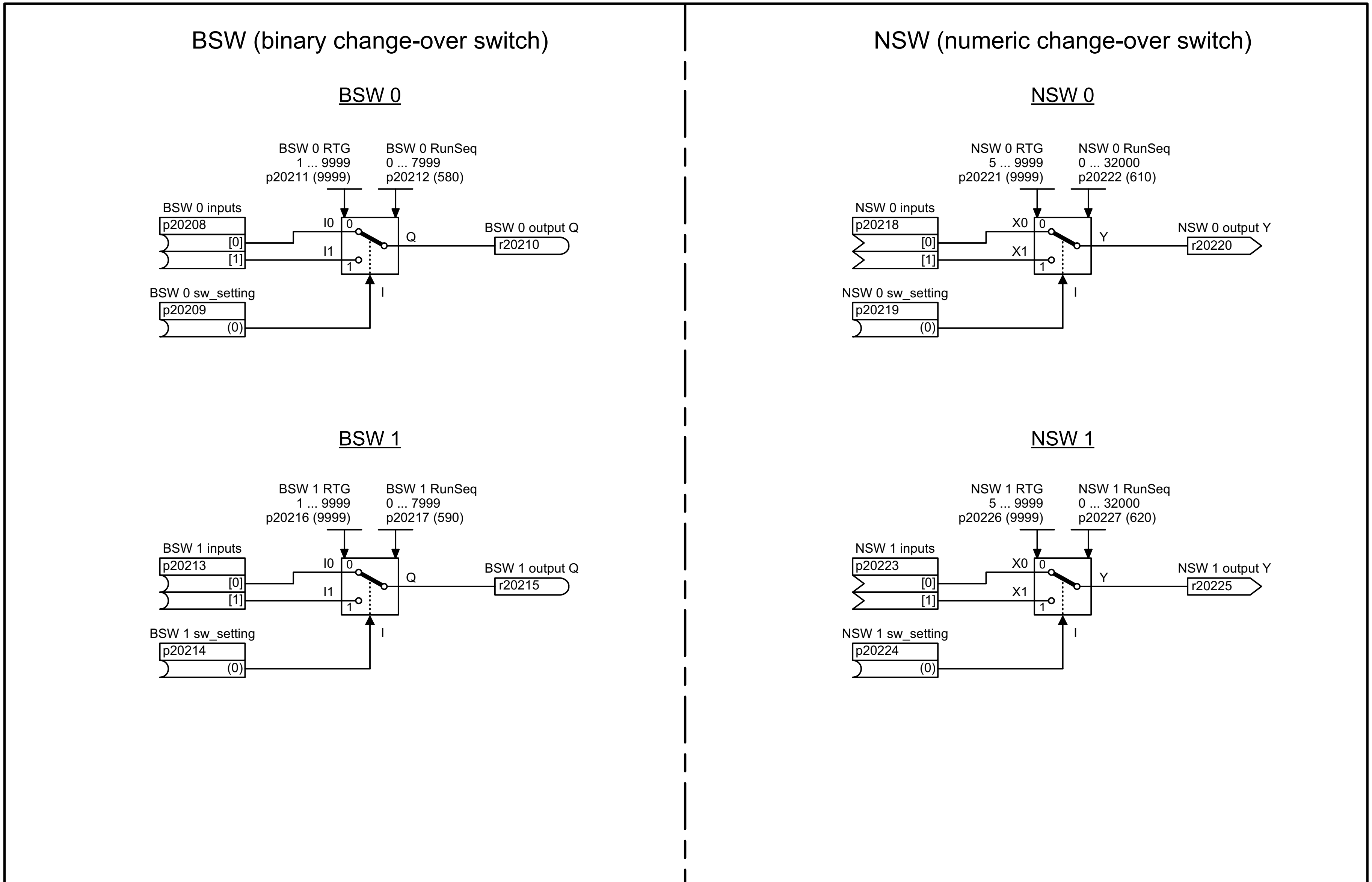
Fig. 3-147 7240 – RSR 0 … 2, DFR 0 … 2



1	2	3	4	5	6	7	8

Free function blocks - Flipflop function blocks	fp_7240_97_61.vsd	Function diagram	- 7240 -
RSR 0 … 2, DFR 0 … 2	13.03.2018 V4.7_10	G120 CU230P-2	

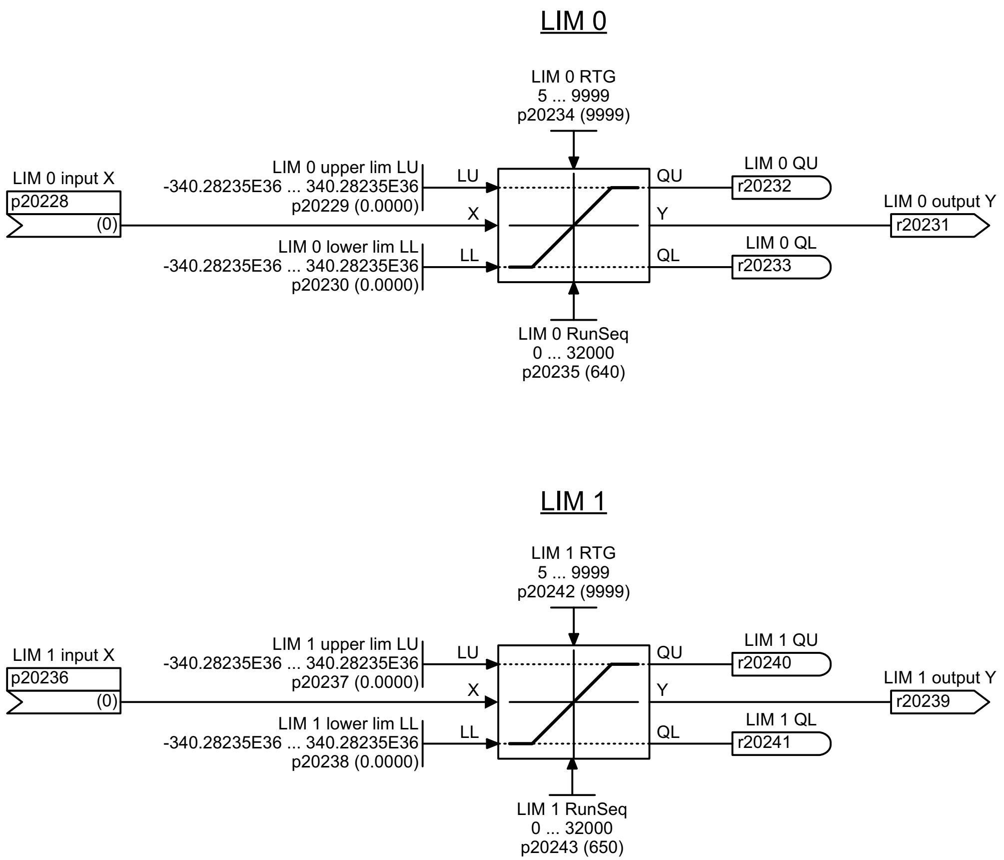
Fig. 3-148 7250 – BSW 0 ... 1, NSW 0 ... 1



1	2	3	4	5	6	7	8
Free function blocks - Switch function blocks					fp_7250_97_61.vsd	Function diagram	- 7250 -
BSW 0 … 1, NSW 0 … 1					13.03.2018 V4.7_10	G120 CU230P-2	

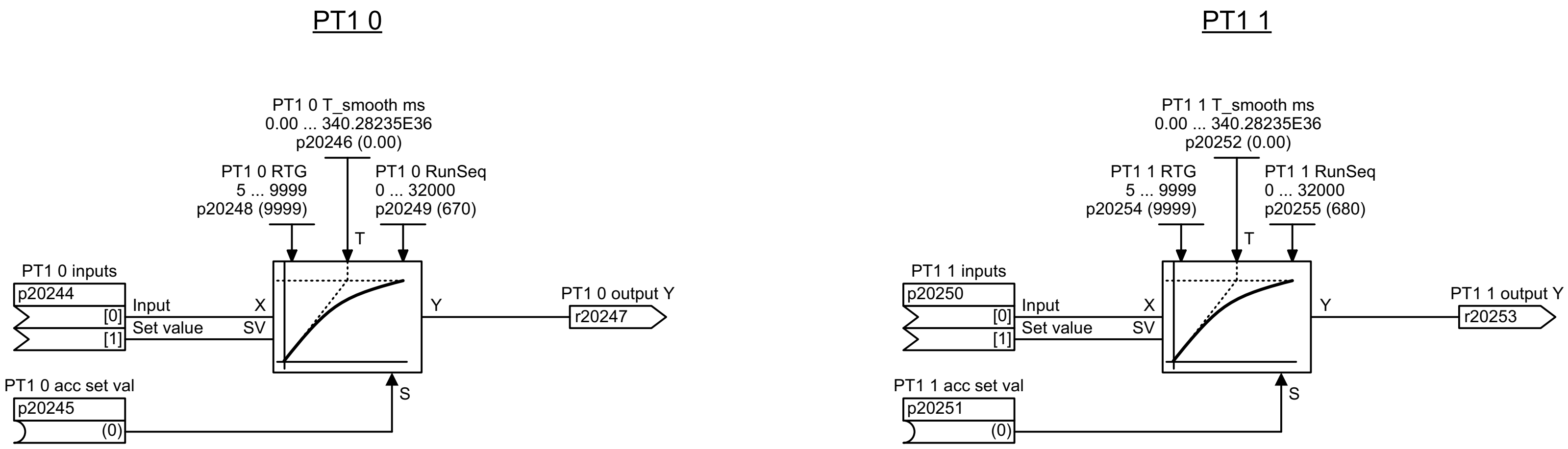
Fig. 3-149 7260 – LIM 0 … 1

LIM (limiter)



1	2	3	4	5	6	7	8
Free function blocks - Control function blocks					fp_7260_97_61.vsd	Function diagram	- 7260 -
LIM 0 … 1					13.03.2018 V4.7_10	G120 CU230P-2	

PT1 (smoothing element)



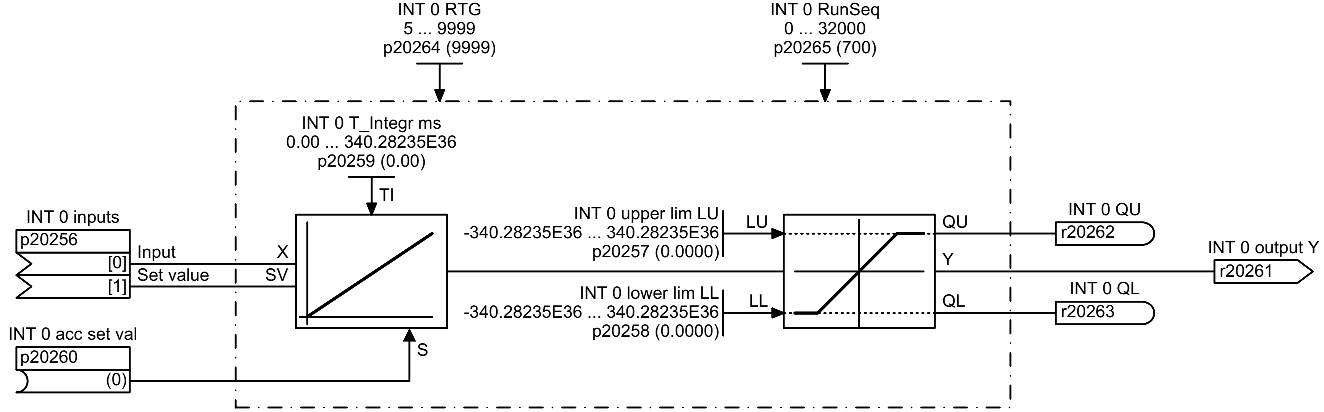
1	2	3	4	5	6	7	8
Free function blocks - Control function blocks					fp_7262_97_61.vsd	Function diagram	- 7262 -
PT1 0 … 1					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-150 7262 – PT1 0 ... 1

Fig. 3-151 7264 – INT 0, DIF 0

INT (integrator)

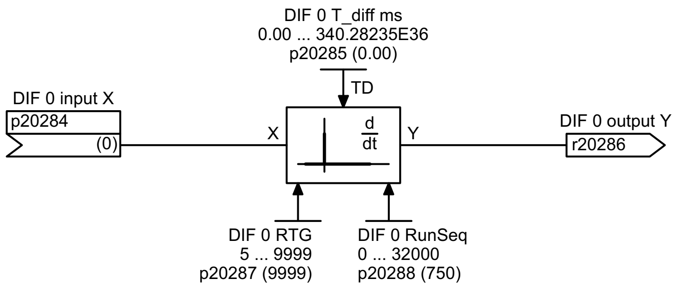
INT 0



Integrating algorithm: Y(n) = Y(n-1) + (T_sample / Ti) · X(n)

DIF (derivative-action element)

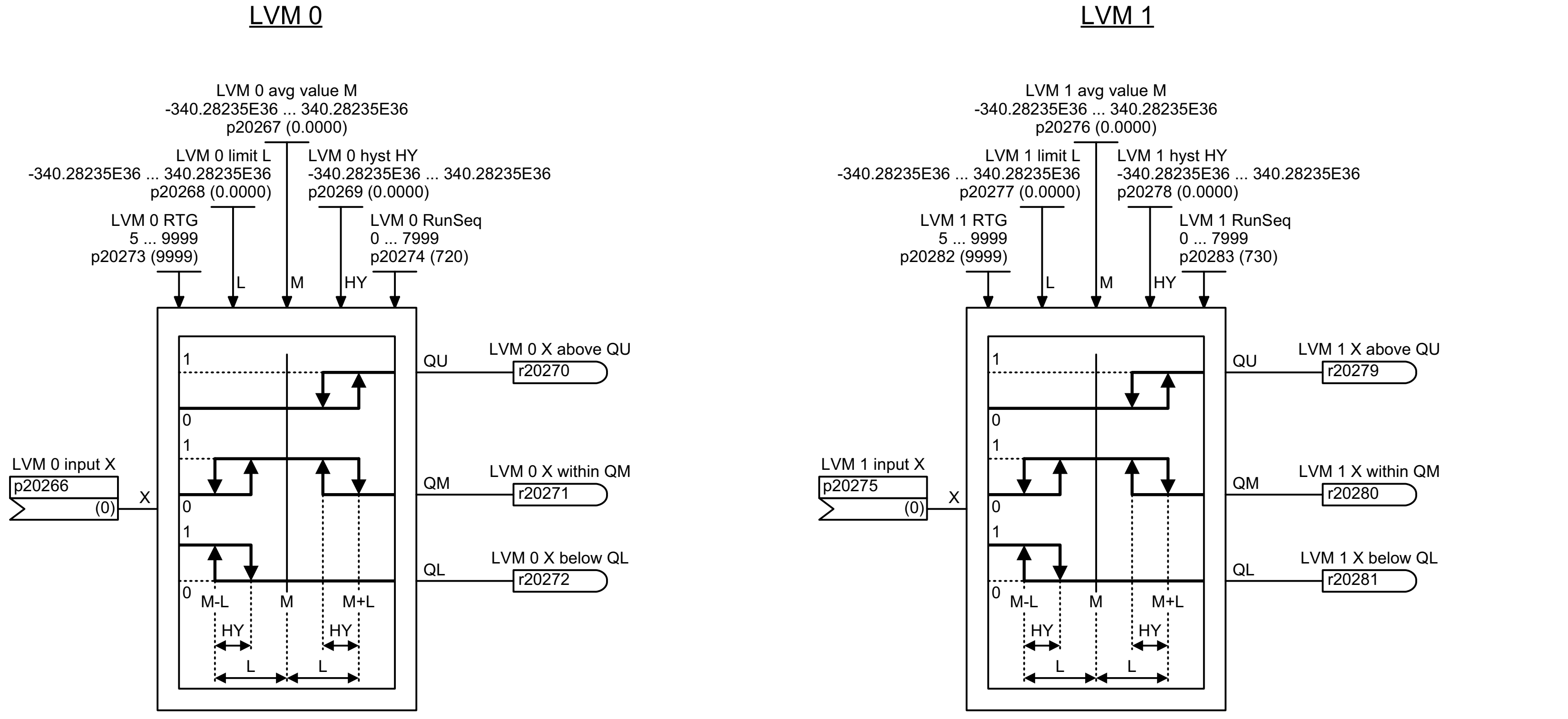
DIF 0



Differentiating algorithm: Y(n) = (X(n) - X(n-1)) · (TD / T_sample)

1	2	3	4	5	6	7	8
Free function blocks - Control function blocks					fp_7264_97_61.vsd	Function diagram	- 7264 -
INT 0, DIF 0					13.03.2018 V4.7_10	G120 CU230P-2	

LVM (double-sided limit monitor with hysteresis)



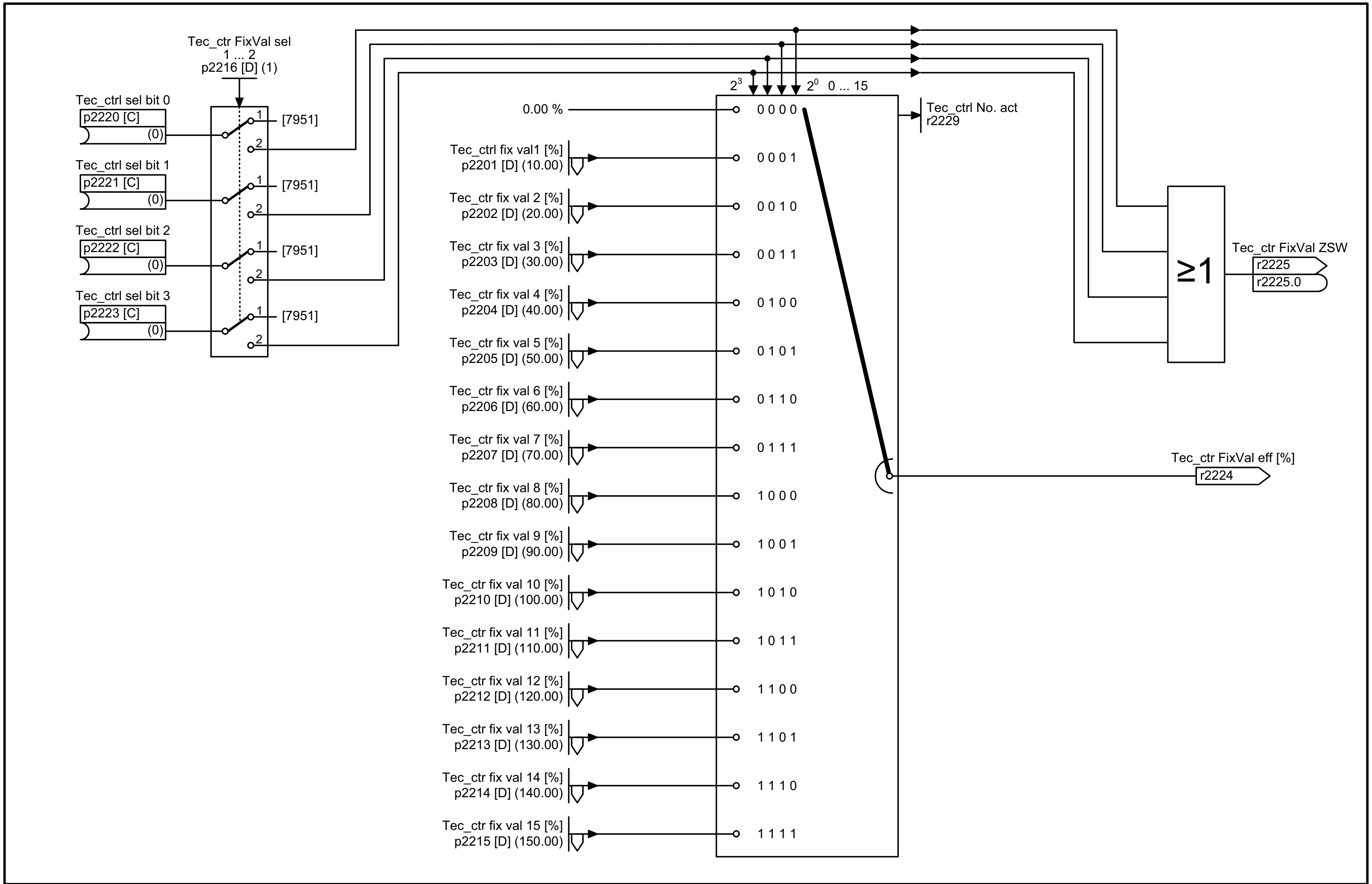
1	2	3	4	5	6	7	8
Free function blocks - Complex function blocks					fp_7270_97_61.vsd	Function diagram	- 7270 -
LVM 0 … 1					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-152 7270 – LVM 0 ... 1

3.15 Technology controller

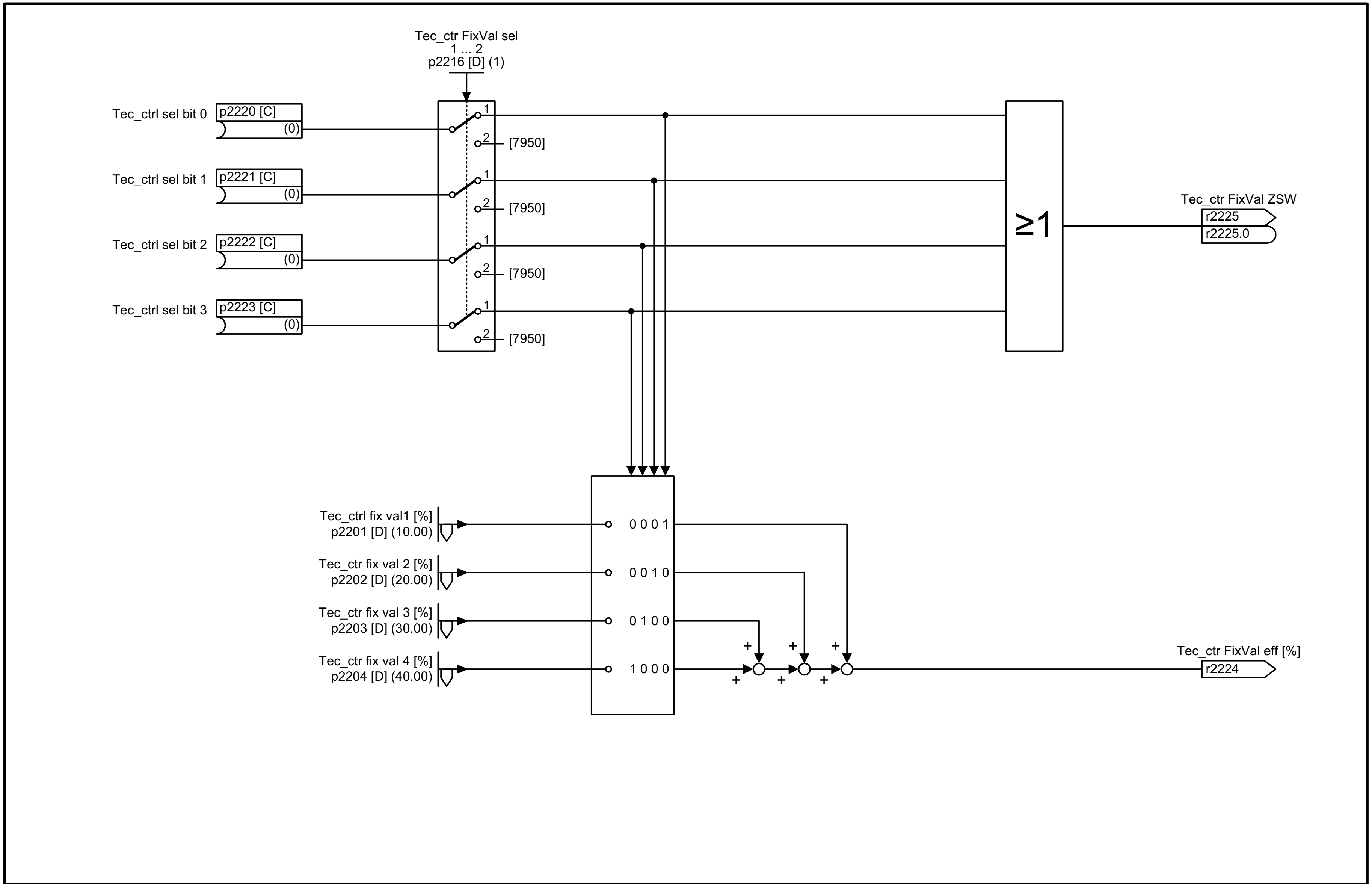
Function diagrams

Fig. 3-153 7950 – Fixed values, binary selection (p2216 = 2)



1	2	3	4	5	6	7	8

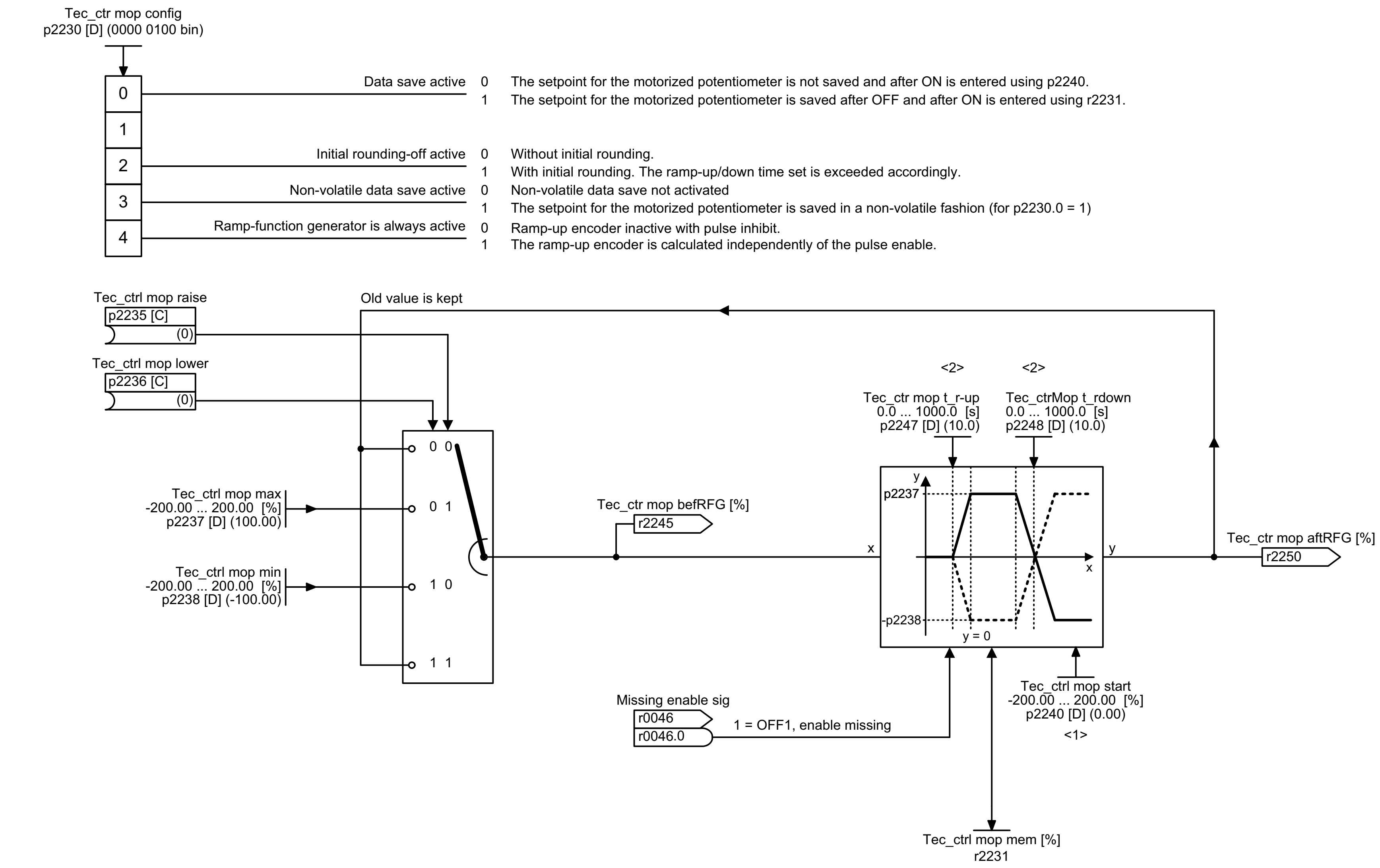
Technology controller	fp_7950_97_51.vsd	Function diagram	- 7950 -
Fixed value selection binary (p2216 = 2)	13.03.2018 V4.7_10	G120 CU230P-2	



1	2	3	4	5	6	7	8
Technology controller					fp_7951_97_51.vsd	Function diagram	- 7951 -
Fixed value selection direct (p2216 = 1)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-154 7951 – Fixed values, director selection (p2216 = 1)

Fig. 3-155 7954 – Motorized potentiometer

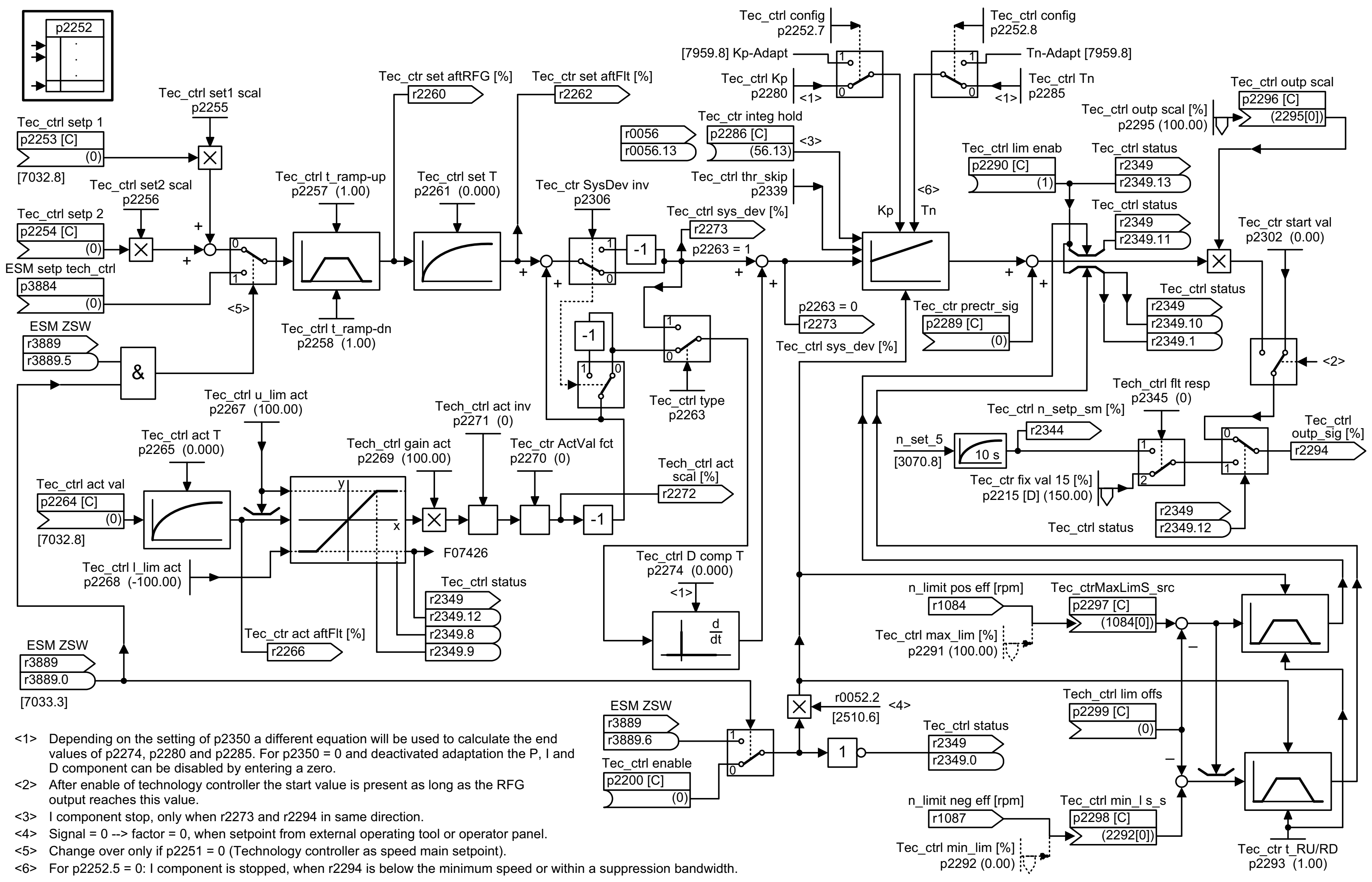


<1> For p2230.0 = 0, this setpoint is entered after ON.
<2> If initial rounding-off is active (p2230.2 = 1), the selected ramp-up/down times are exceeded accordingly.

1	2	3	4	5	6	7	8

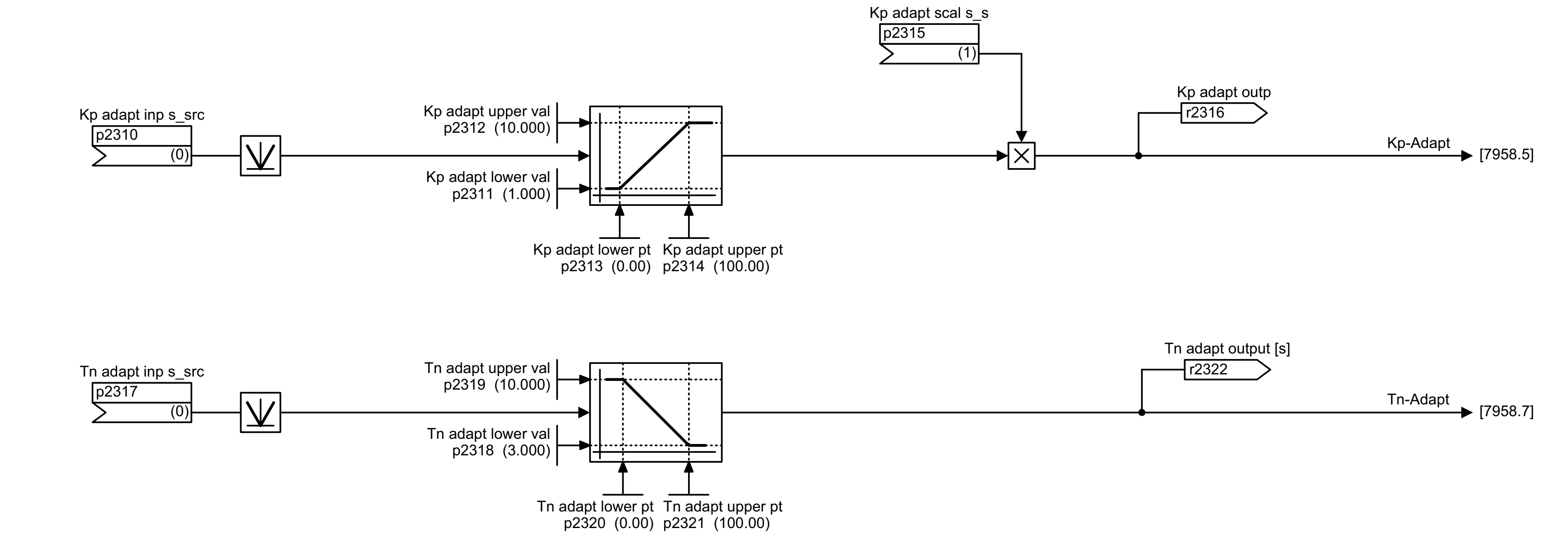
Technology controller	fp_7954_97_61.vsd	Function diagram	- 7954 -
Motorized potentiometer	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-156 7958 – Closed-loop control



<1> Depending on the setting of p2350 a different equation will be used to calculate the end values of p2274, p2280 and p2285. For p2350 = 0 and deactivated adaptation the P, I and D component can be disabled by entering a zero.
<2> 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> Signal = 0 --> factor = 0, when setpoint from external operating tool or operator panel.
<5> Change over only if p2251 = 0 (Technology controller as speed main setpoint).
<6> For p2252.5 = 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_01.vsd	Function diagram	- 7958 -
Closed-loop control					13.03.2018 V4.7_10	G120 CU230P-2	

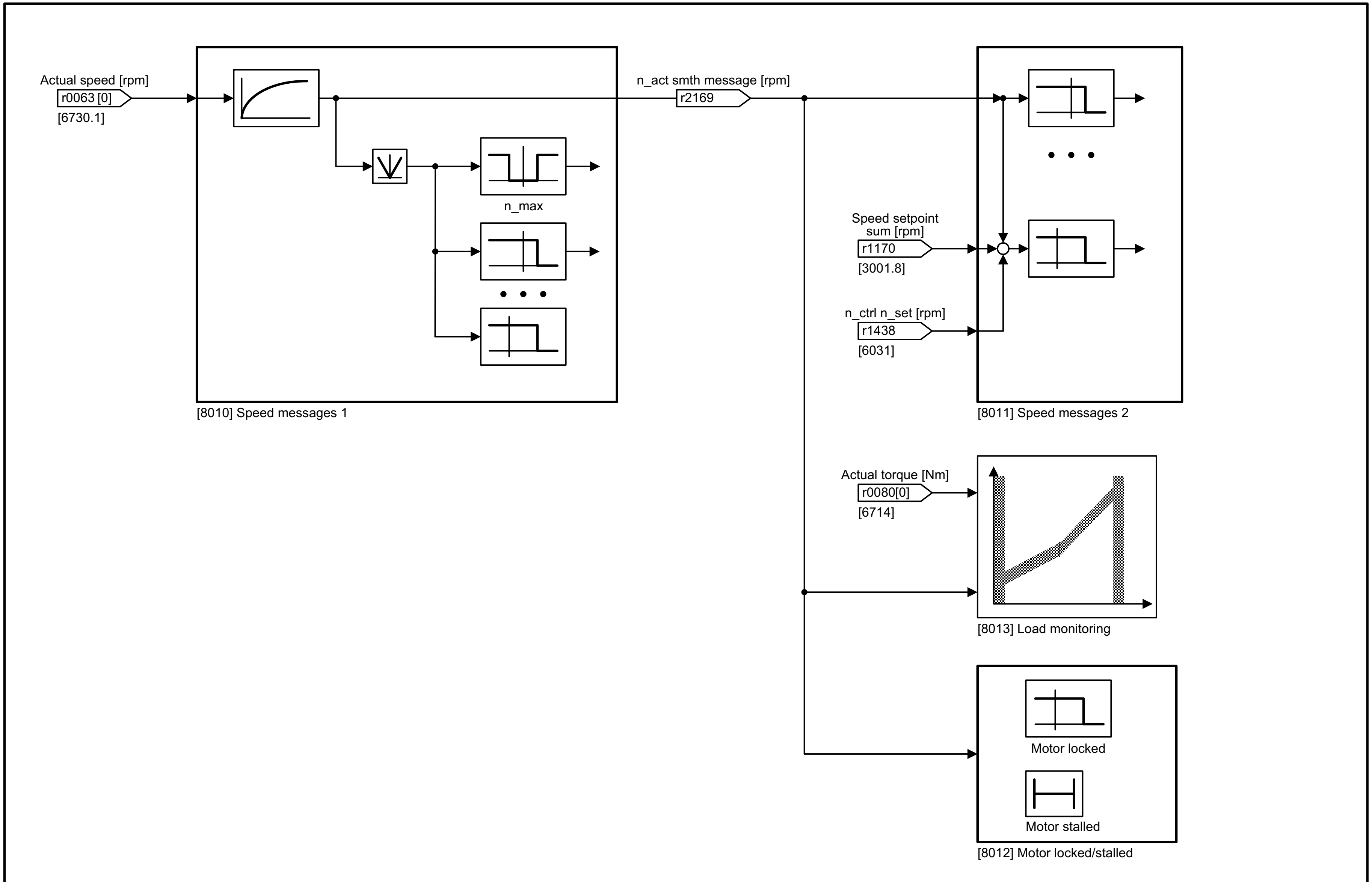


1	2	3	4	5	6	7	8
Technology controller					fp_7959_97_01.vsd	Function diagram	- 7959 -
Kp-/Tn-adaptation					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-157 7959 – Kp/Tn adaptation

3.16 Signals and monitoring functions

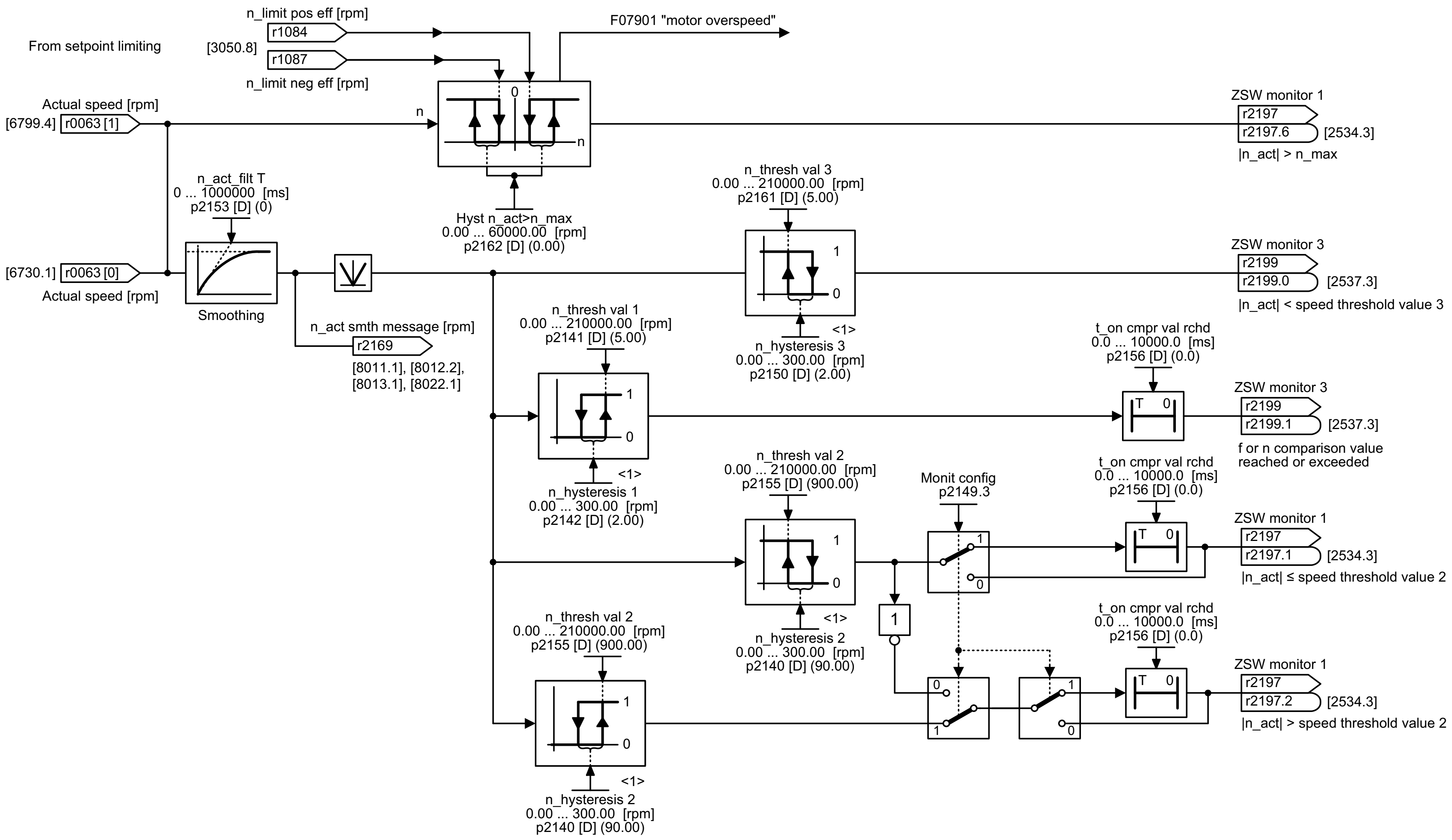
Function diagrams



1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8005_97_01.vsd	Function diagram	- 8005 -
Overview					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-158 8005 – Overview

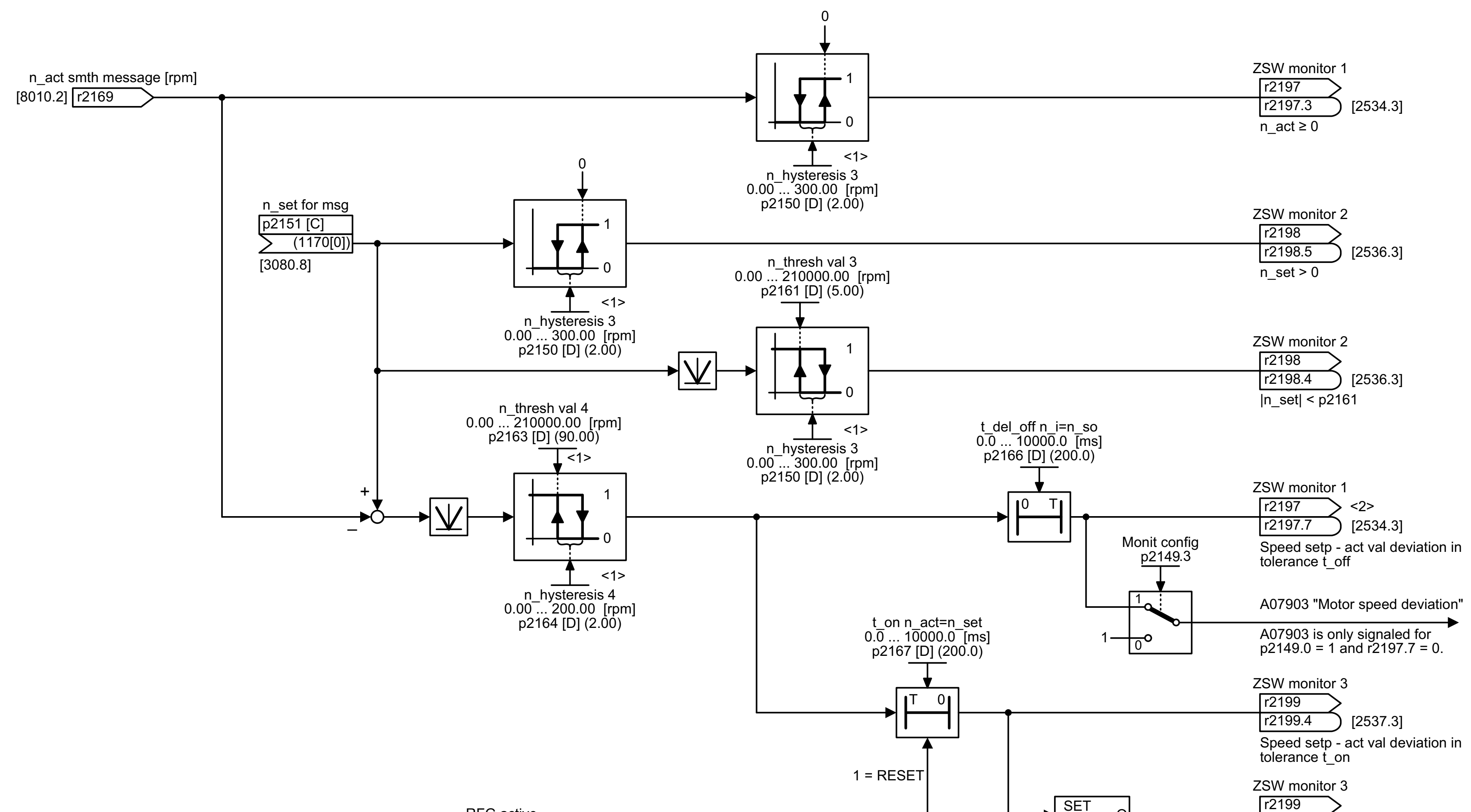
Fig. 3-159 8010 – Speed signals 1



<1> Calculated.

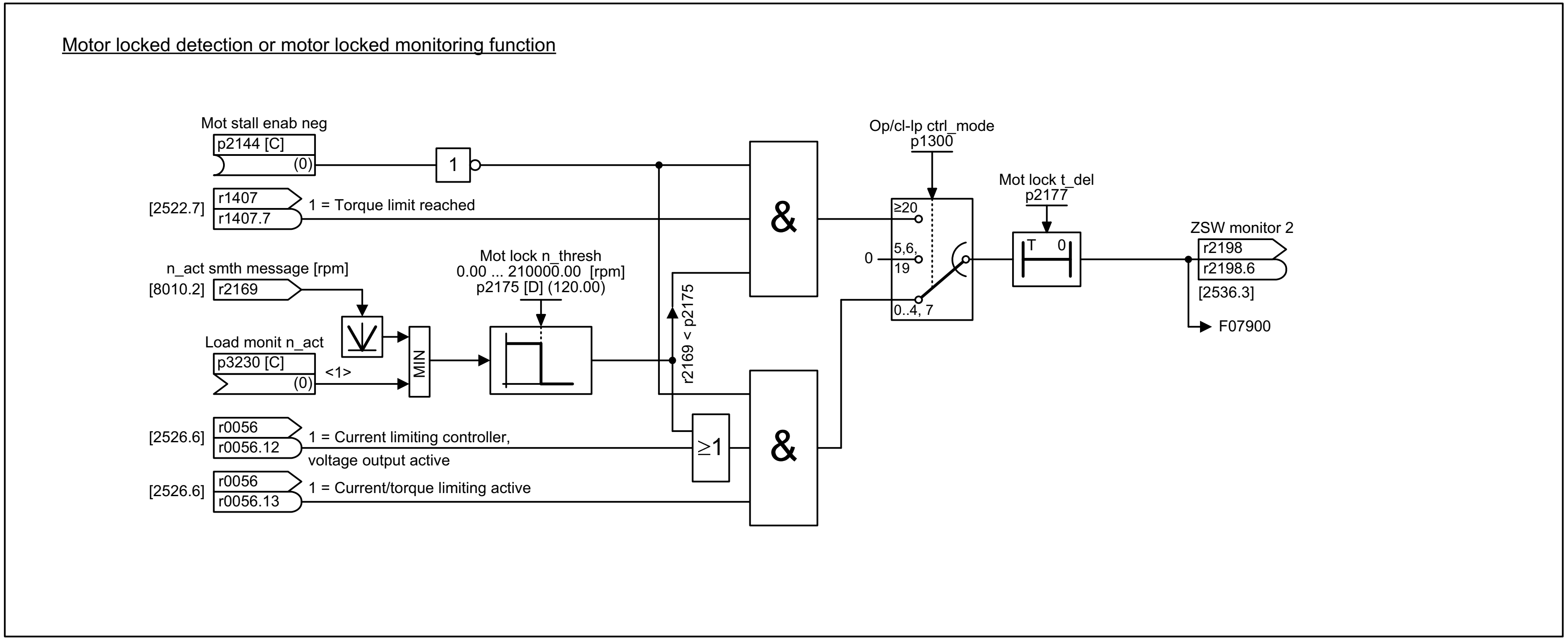
1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8010_97_01.vsd	Function diagram	- 8010 -
Speed signals 1					13.03.2018 V4.7_10	G120 CU230P-2	

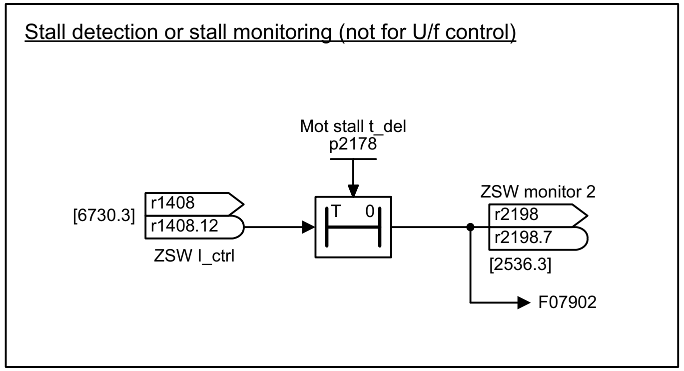
Fig. 3-160 8011 – Speed signals 2



<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_01.vsd	Function diagram	- 8011 -
Speed signals 2					13.03.2018 V4.7_10	G120 CU230P-2	



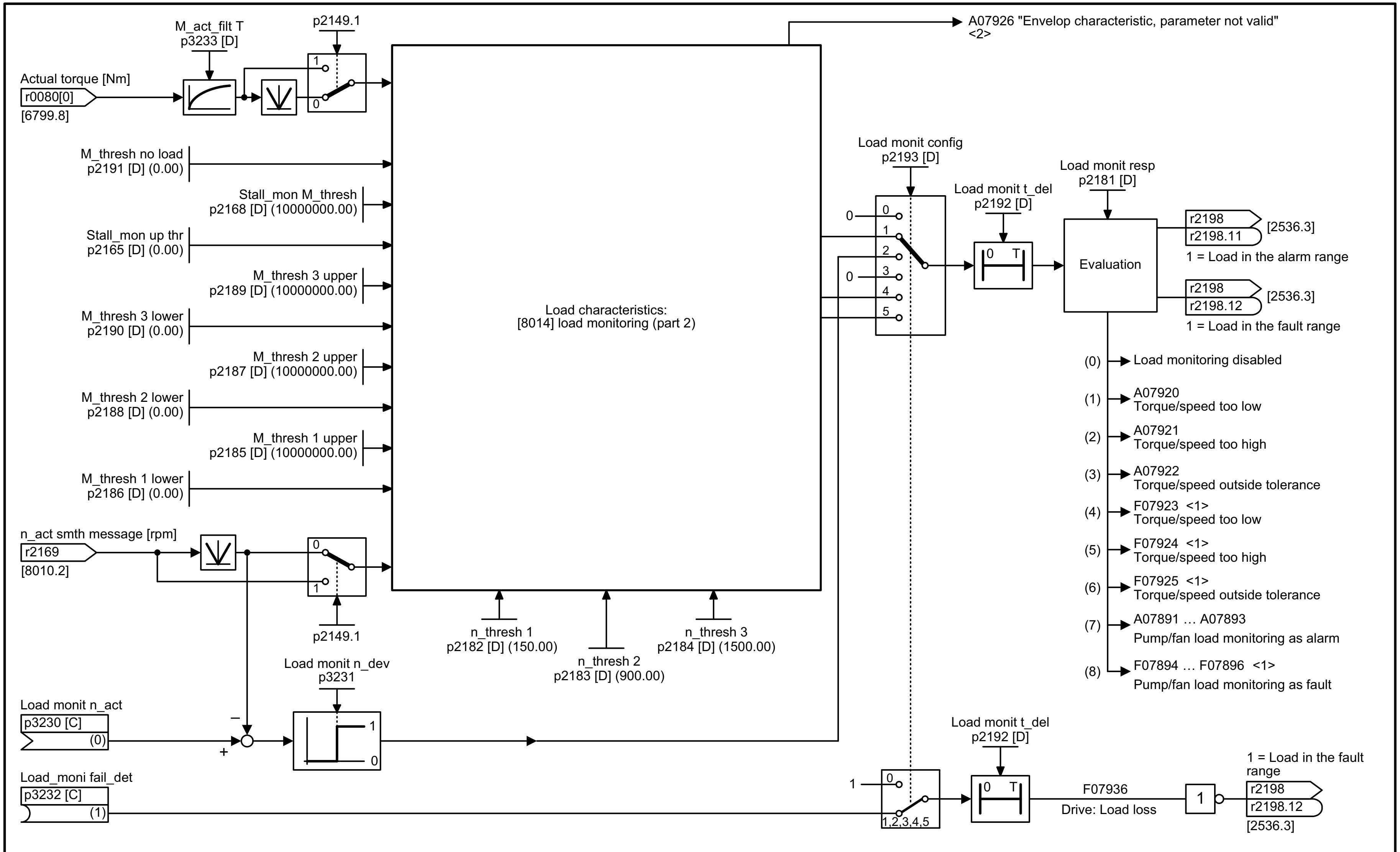


<1> Only evaluated with p2193 = 2 and U/f control.

1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8012_97_01.vsd	Function diagram	- 8012 -
Motor blocked/stalled					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-161 8012 – Motor blocked/stalled

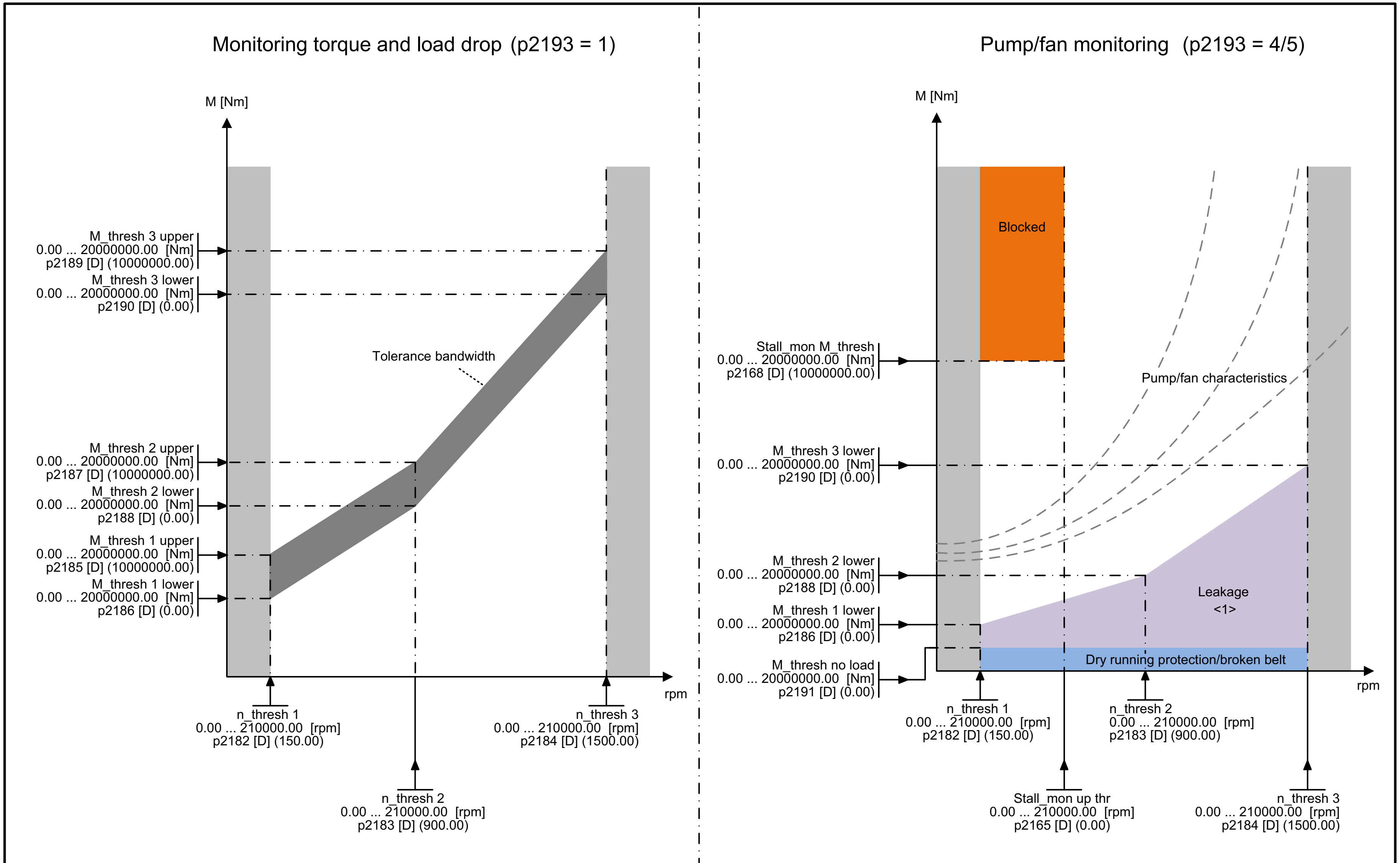
Fig. 3-162 8013 – Load monitoring (Part 1)



<1> The response to these faults can be defined.
<2> Fault evaluation only with p2181 > 0 and p2193 > 0.

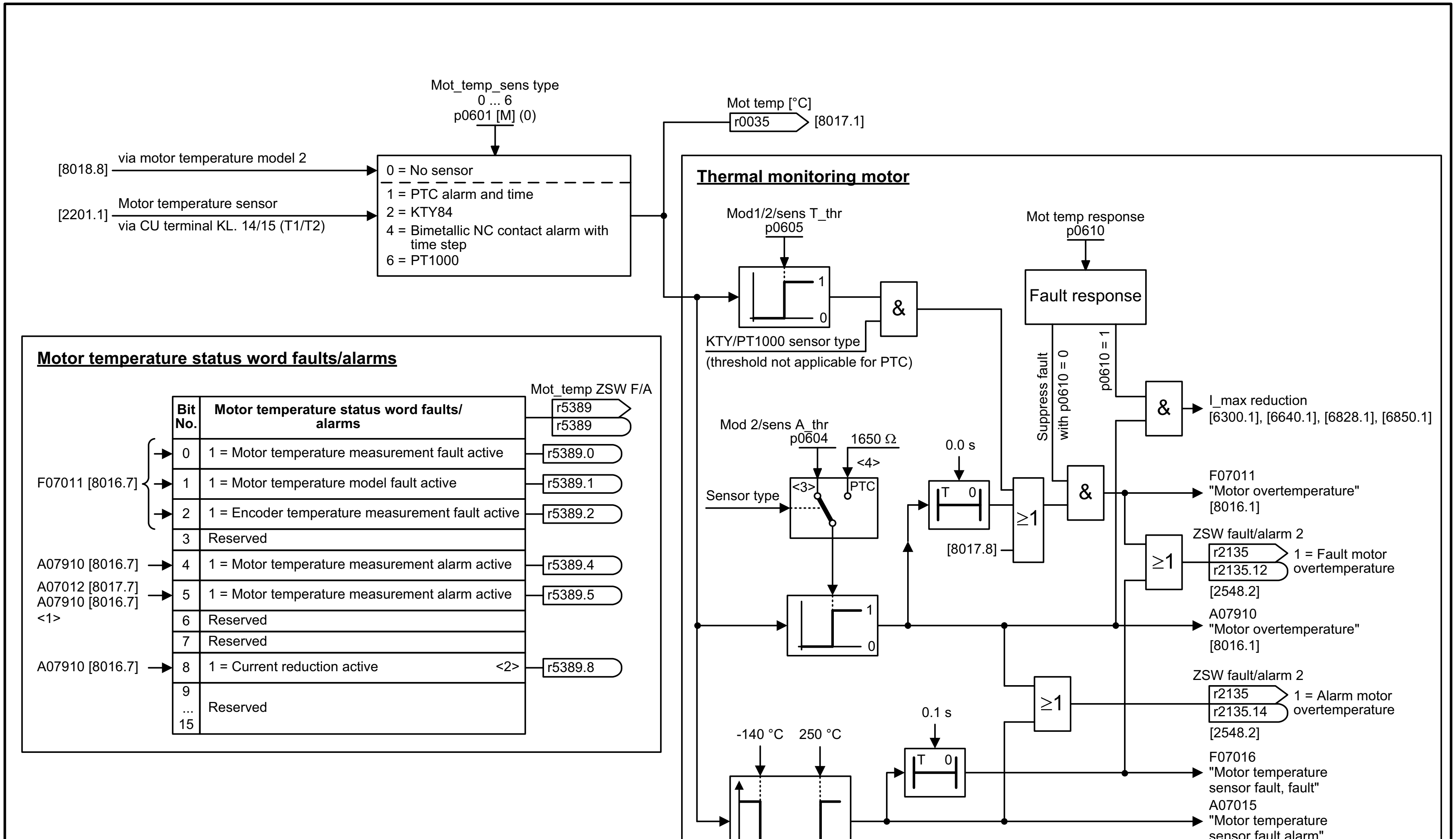
1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8013_97_54.vsd	Function diagram	- 8013 -
Load monitoring (part 1)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-163 8014 – Load monitoring (Part 2)



<1> Only for pump applications.

1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8014_97_54.vsd	Function diagram	- 8014 -
Load monitoring (part 2)					13.03.2018 V4.7_10	G120 CU230P-2	

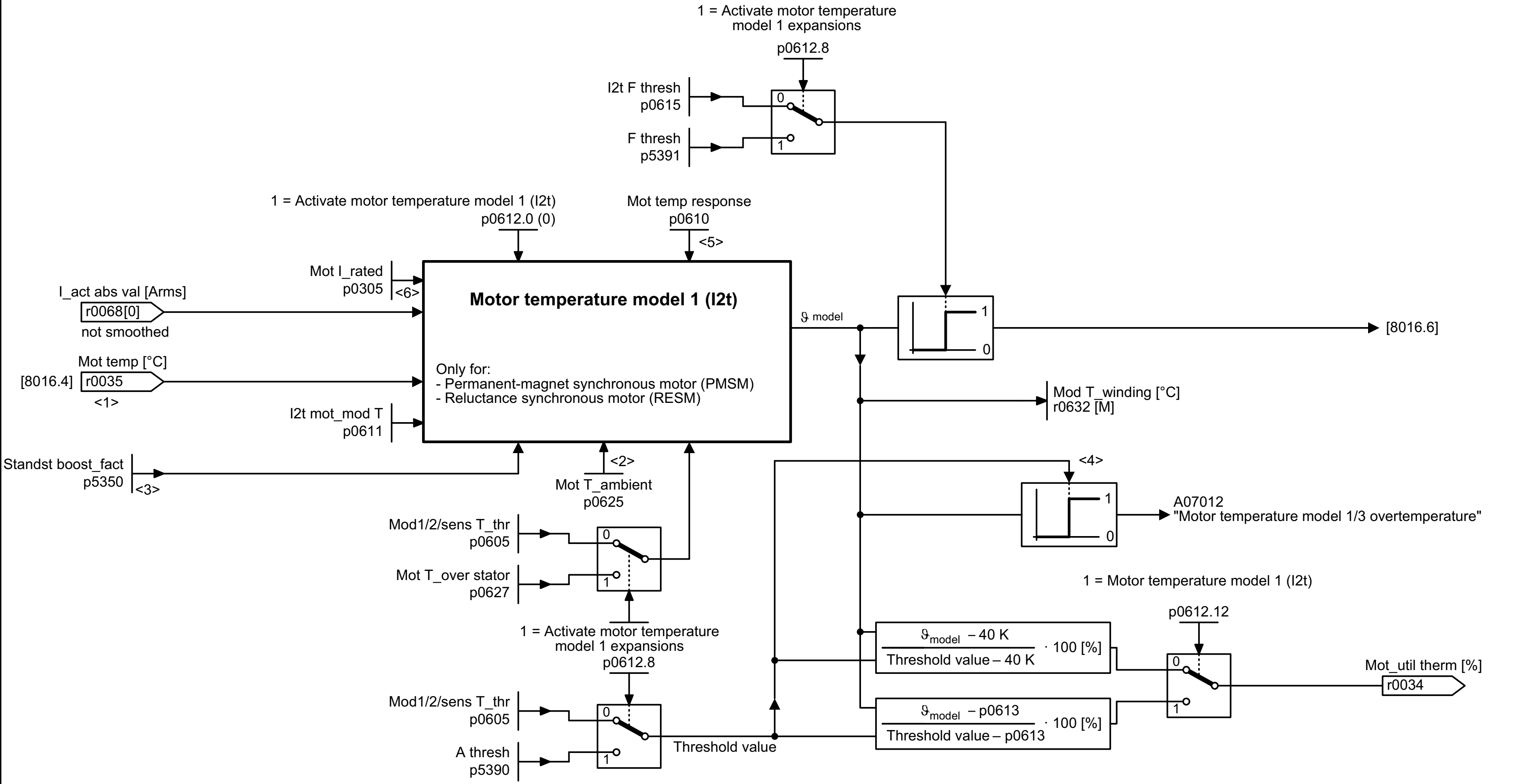


Bit No.	Motor temperature status word faults/ alarms
0	1 = Motor temperature measurement fault active
1	1 = Motor temperature model fault active
2	1 = Encoder temperature measurement fault active
3	Reserved
4	1 = Motor temperature measurement alarm active
5	1 = Motor temperature measurement alarm active
6	Reserved
7	Reserved
8	1 = Current reduction active <2>
9 ... 15	Reserved

<1> Motor temperature model 1/3: A07012
Motor temperature model 2: A07910
<2> Only for p0610 = 1.
<3> Only for p0601 = 0, 2, 6.
<4> The relevant rated response temperature in °C depends on the temperature sensor chosen by the motor manufacturer.

1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8016_97_01.vsd	Function diagram	- 8016 -
Thermal monitoring motor, motor temperature status word faults/alarms					13.03.2018 V4.7_10	G120 CU230P-2	

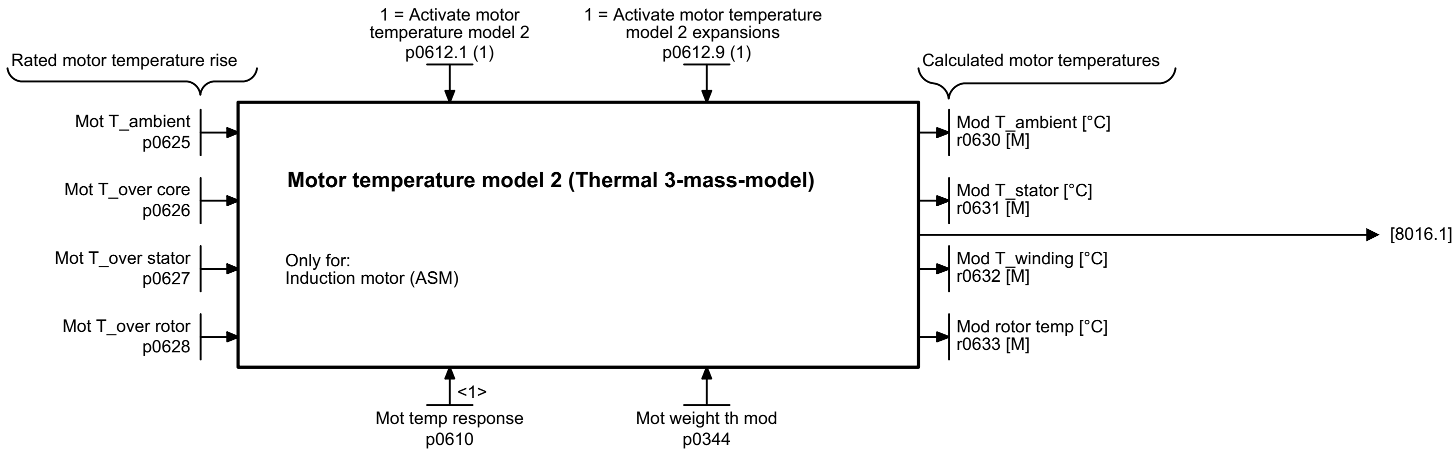
Fig. 3-164 8016 – Thermal monitoring motor, motor temperature status word faults/alarms



<1> Only if there is a temperature sensor (p0601 > 0).
<2> Only if <1> are not met.
<3> Only if p0612.8 = 1.
<4> p0605 also defines the target temperature for p0034 = 100 %. Therefore, p0605 has no influence on the time up to alarm A07012.
<5> If p0610 = 12.
<6> For Synchronous reluctance motor: p0318. The lower p0611 and the lower the reference current of the thermal motor model 1 (I2t), the faster A07012 is reached.

1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8017_97_59.vsd	Function diagram	- 8017 -
Motor temperature model 1 (I2t)					13.03.2018 V4.7_10	G120 CU230P-2	

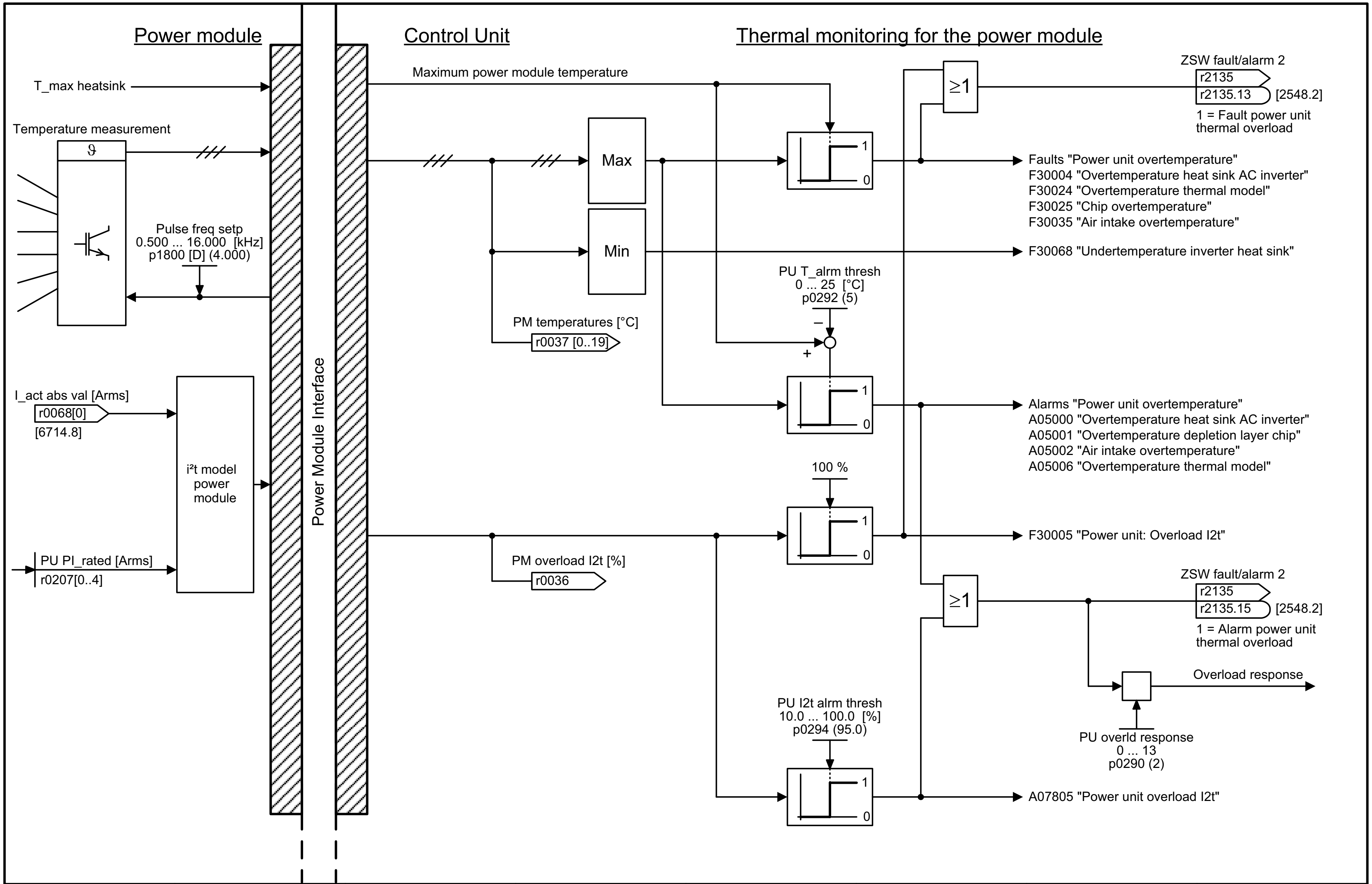
Fig. 3-165 8017 – Motor temperature model 1 (I2t)



<1> If p0610 = 12.

1	2	3	4	5	6	7	8
Signals and monitoring functions					fp_8018_97_61.vsd	Function diagram	- 8018 -
Motor temperature model 2					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-167 8021 – Thermal monitoring, power unit



1	2	3	4	5	6	7	8

Signals and monitoring functions	fp_8021_97_51.vsd	Function diagram	- 8021 -
Thermal monitoring, power module	13.03.2018 V4.7_10	G120 CU230P-2	

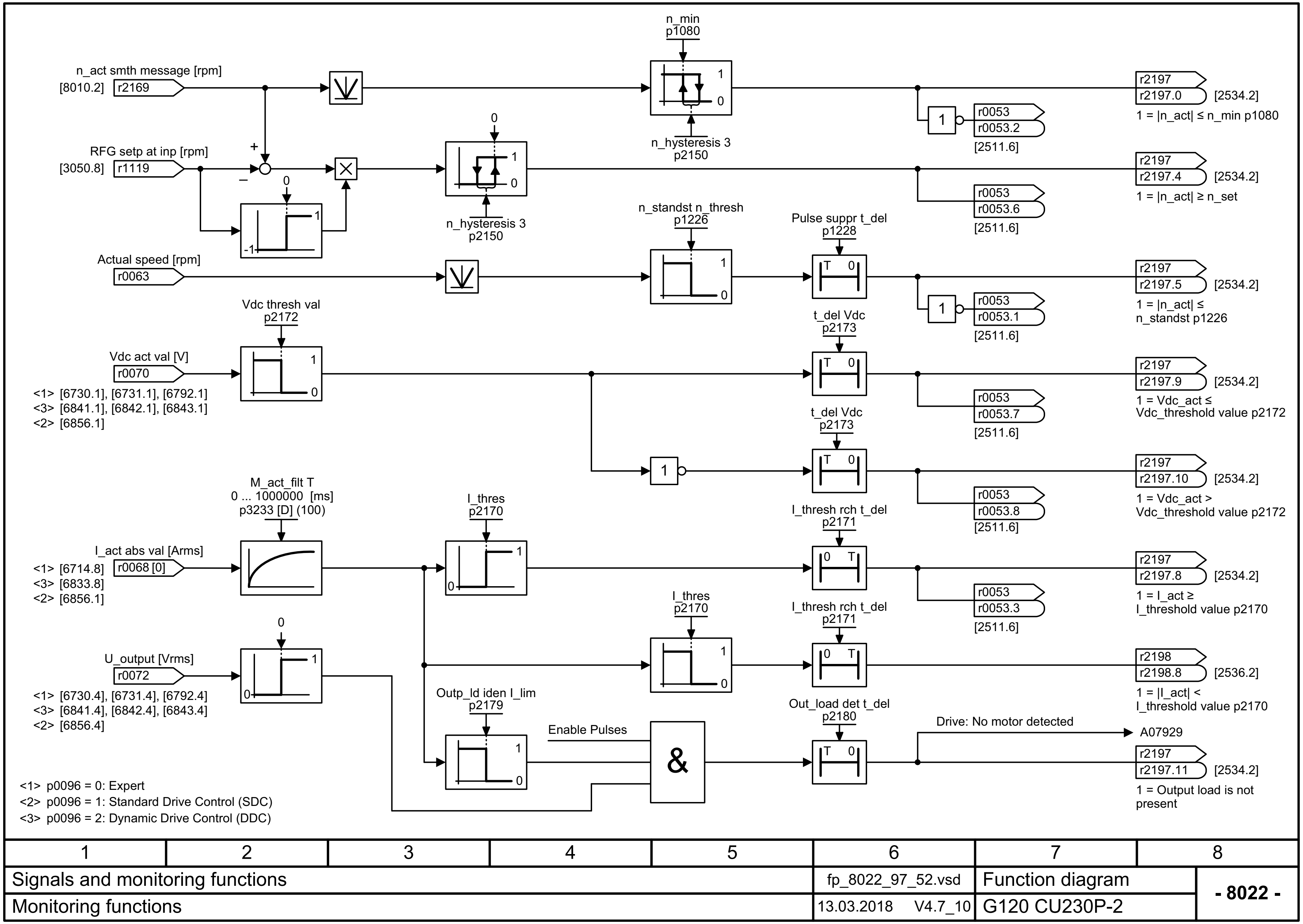
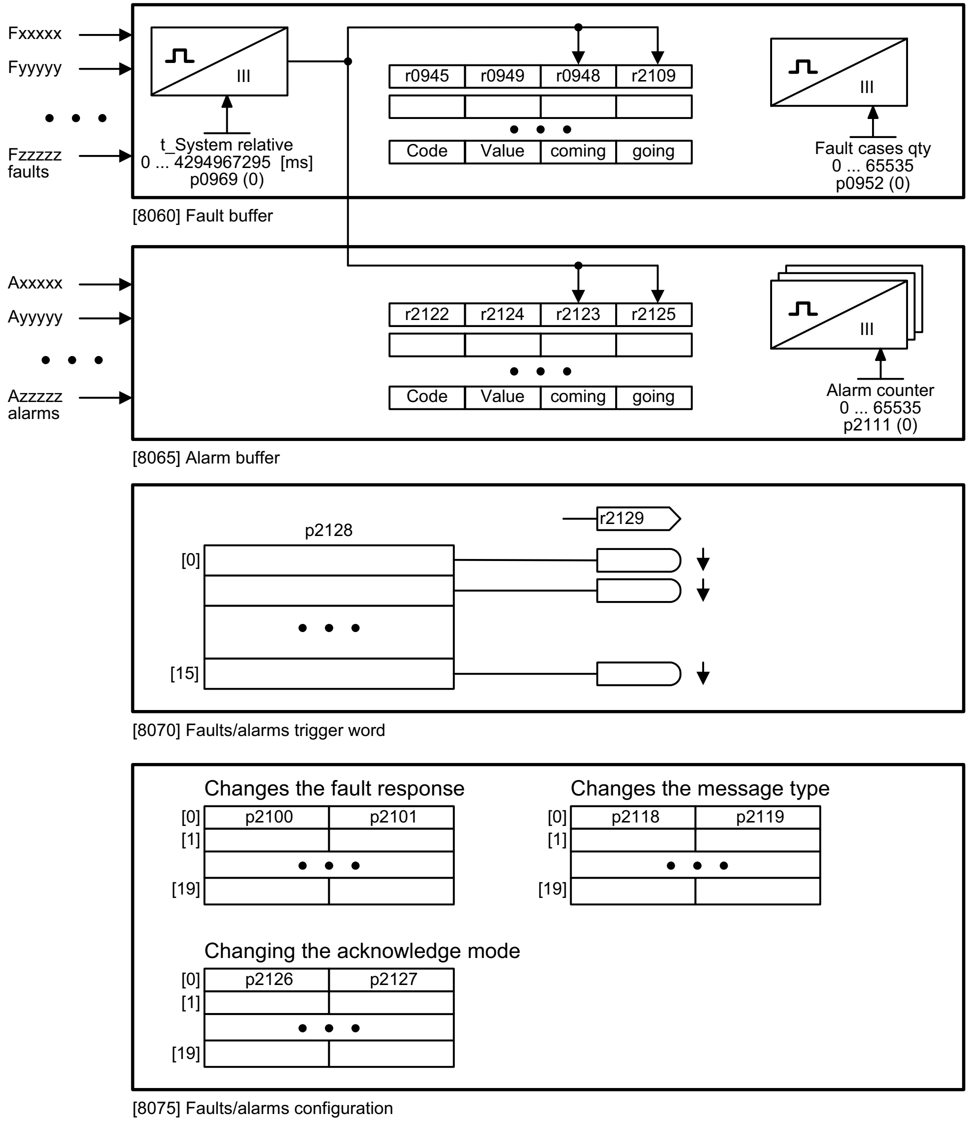


Fig. 3-168 8022 – Monitoring functions

3.17 Diagnostics

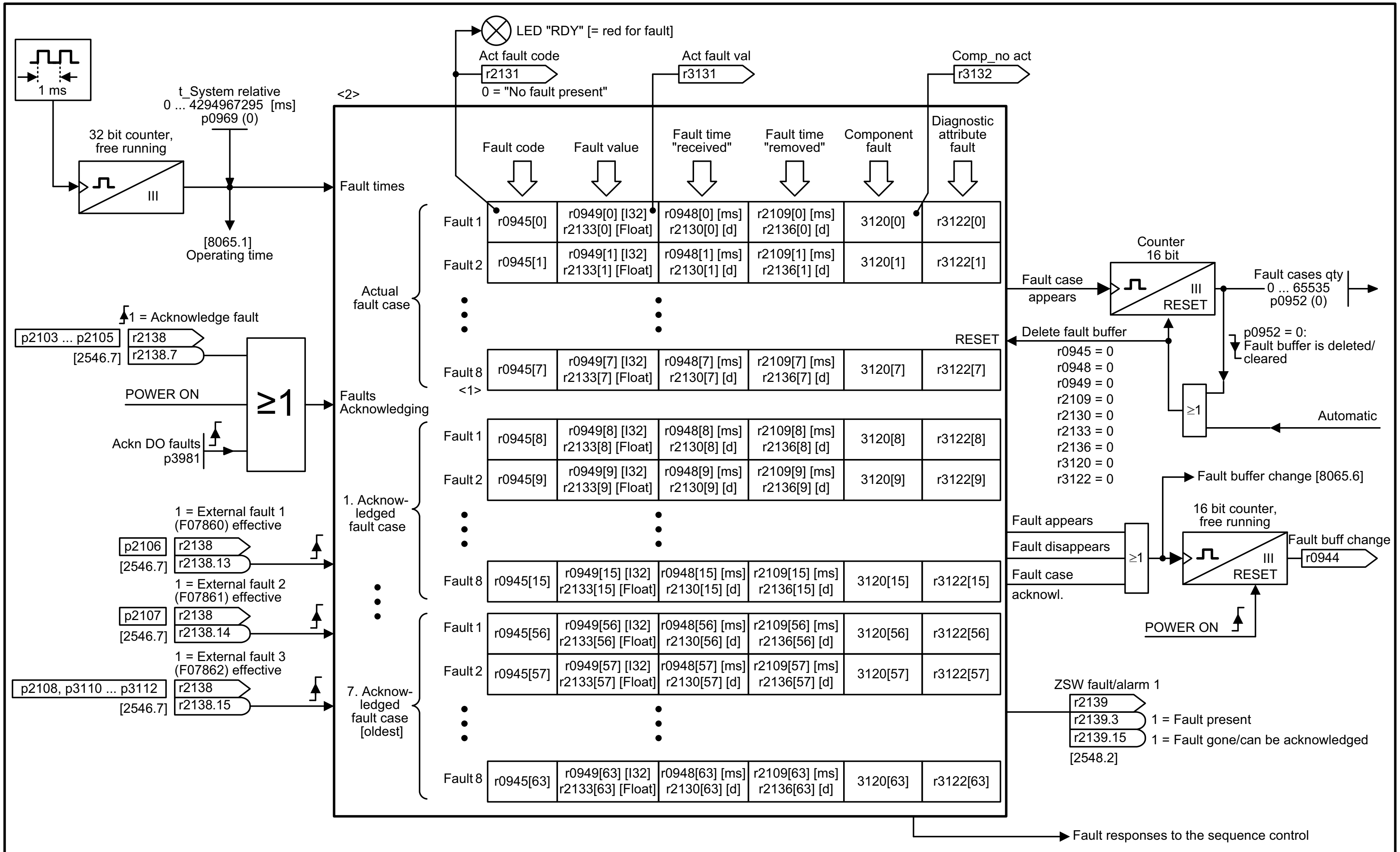
Function diagrams

Fig. 3-169 8050 – Overview



1	2	3	4	5	6	7	8
Diagnostics					fp_8050_97_51.vsd	Function diagram	- 8050 -
Overview					13.03.2018 V4.7_10	G120 CU230P-2	

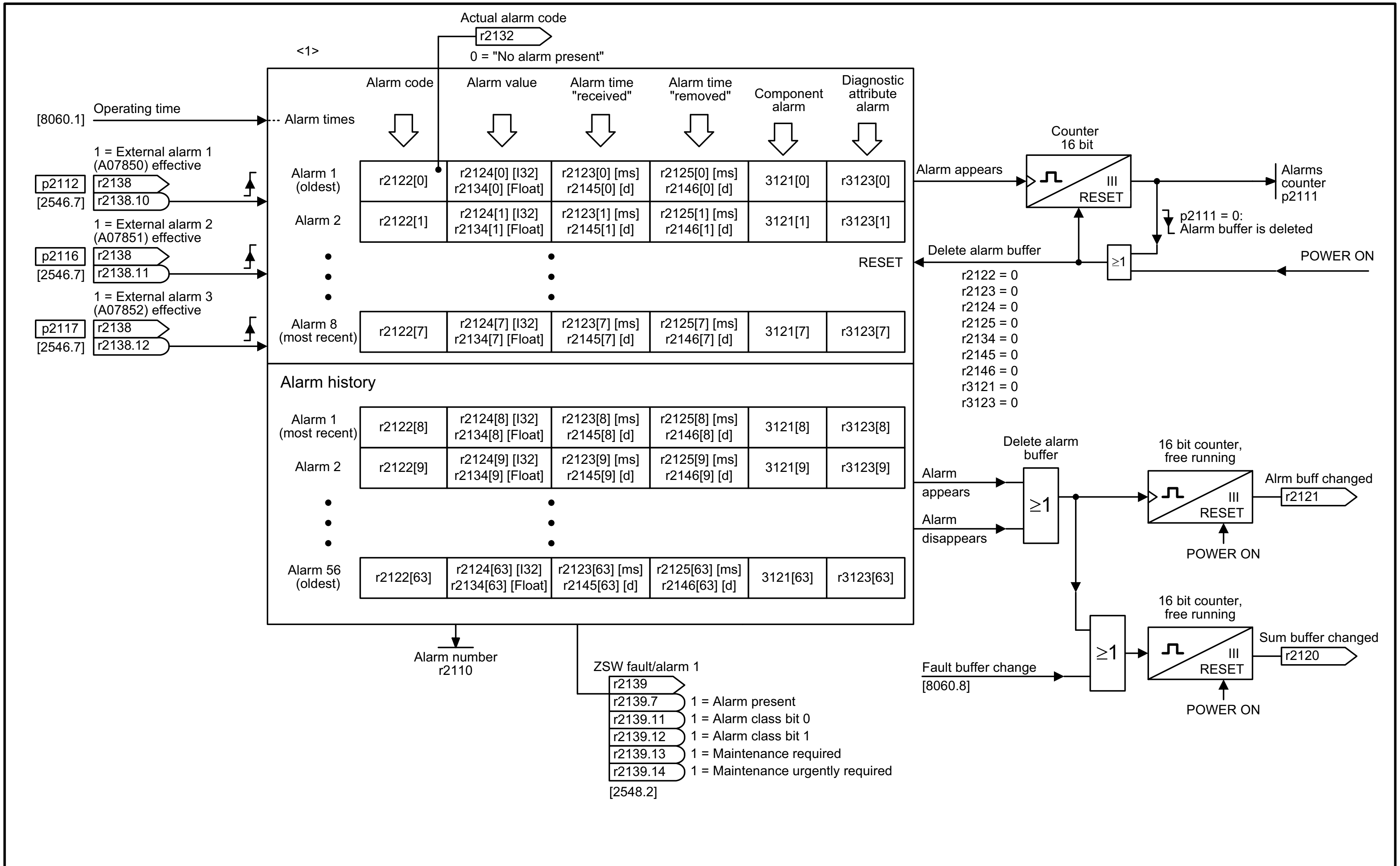
Fig. 3-170 8060 – Fault buffer



<1> This fault is overwritten when "more recent" faults occur.

<2> The buffer parameters are cyclically updated in the background (refer to the status signal in r2139).

1	2	3	4	5	6	7	8
Diagnostics					fp_8060_97_51.vsd	Function diagram	- 8060 -
Fault buffer					13.03.2018 V4.7_10	G120 CU230P-2	

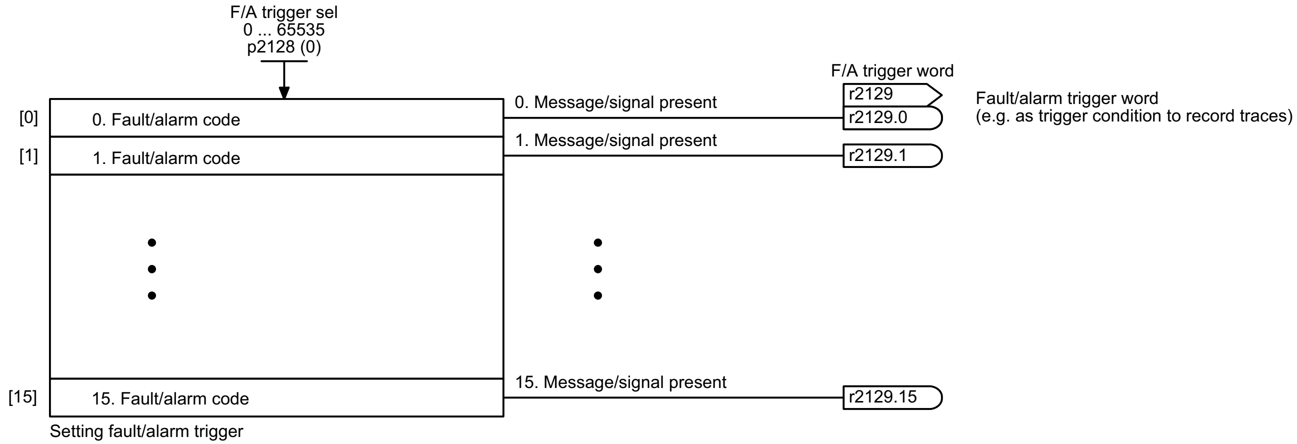


<1> The buffer parameters are updated cyclically in the background (see status signal in r2139).

1	2	3	4	5	6	7	8
Diagnostics					fp_8065_97_51.vsd	Function diagram	- 8065 -
Alarm buffer					13.03.2018 V4.7_10	G120 CU230P-2	

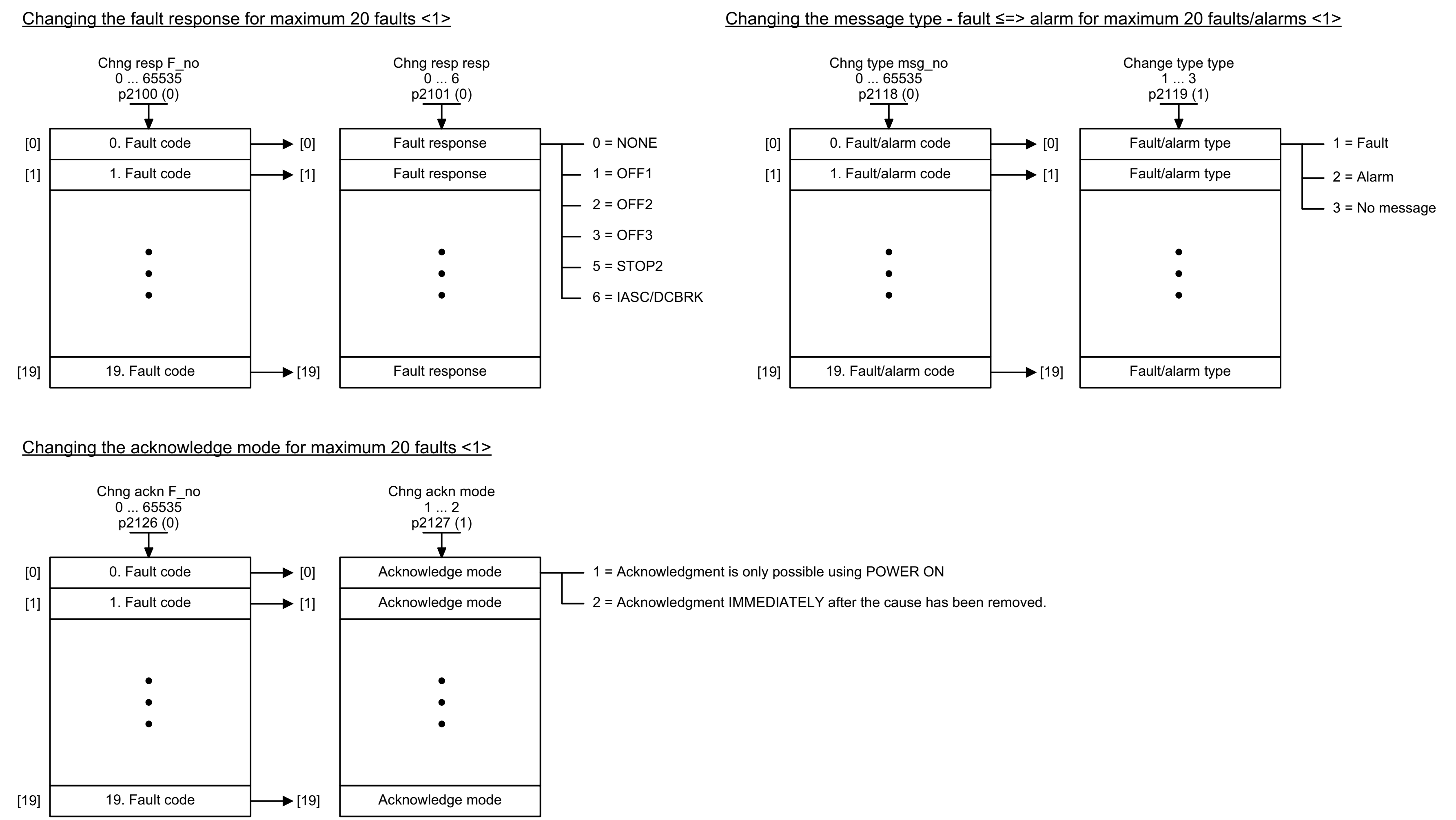
Fig. 3-171 8065 – Alarm buffer

Fig. 3-172 8070 – Faults/alarms trigger word (r2129)



1	2	3	4	5	6	7	8
Diagnostics					fp_8070_97_61.vsd	Function diagram	- 8070 -
Faults/alarms trigger word (r2129)					13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-173 8075 – Faults/alarms configuration



<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 tranferred from fault value r0949 to alarm value r2124 and vice versa.

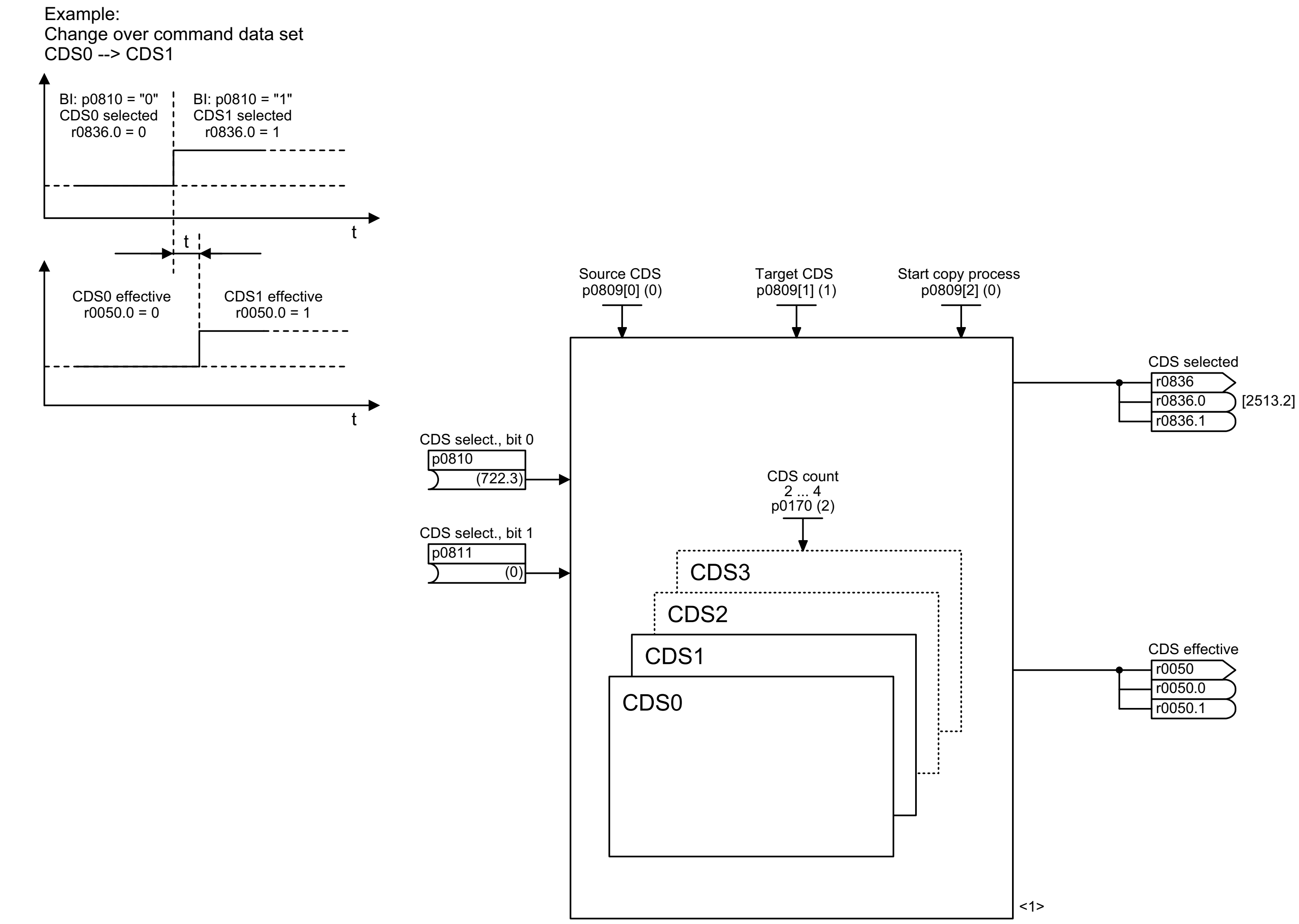
DCBRK = DC Brake
IASC = Internal Armature Short-Circuit

1	2	3	4	5	6	7	8

Diagnostics	fp_8075_97_51.vsd	Function diagram	- 8075 -
Faults/alarms configuration	13.03.2018 V4.7_10	G120 CU230P-2	

3.18 Data sets

Function diagrams



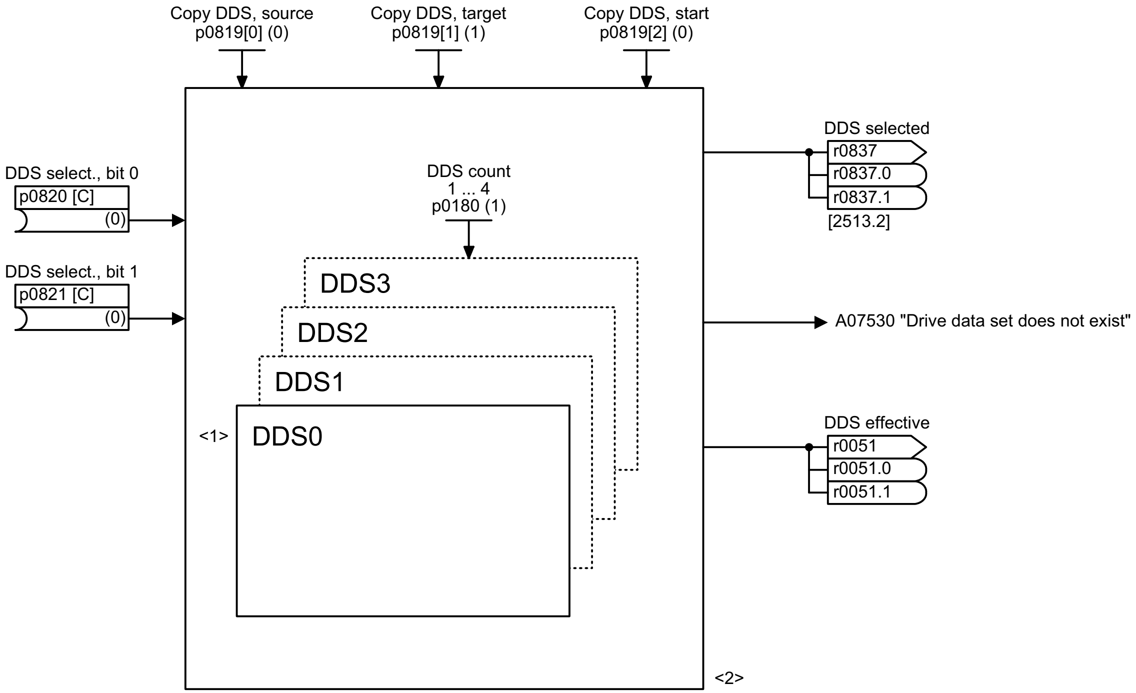
<1> Data sets can only be applied and cleared when p0010 = 15 is set.

1	2	3	4	5	6	7	8

Data sets	fp_8560_97_51.vsd	Function diagram	- 8560 -
Command Data Sets (CDS)	13.03.2018 V4.7_10	G120 CU230P-2	

Fig. 3-174 8560 – Command Data Sets (CDS)

Fig. 3-175 8565 – Drive Data Sets (DDS)



<1> A BICO interconnection to a parameter which is part of a drive data set always influences the currently effective data set.
<2> Data sets can only be applied and cleared when p0010 = 15 is set.

1	2	3	4	5	6	7	8
Data sets					fp_8565_97_54.vsd	Function diagram	- 8565 -
Drive Data Sets (DDS)					13.03.2018 V4.7_10	G120 CU230P-2	

Faults and alarms 4

Content

4.1 Overview of faults and alarms

4.1.1 General

Fault and alarm displays (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	What happens when a fault occurs? • The appropriate fault response is triggered. • Status bit ZSW1.3 is set. • The fault is entered in the fault buffer. How are faults eliminated? • Remove the original cause of the fault. • Acknowledge the fault.
Alarms	What happens when an alarm occurs? • Status signal ZSW1.7 is set. • The alarm is entered into the alarm buffer. How are alarms eliminated? • Alarms acknowledge themselves. If the cause of the alarm is no longer present, they automatically reset themselves.

Fault reactions

The following fault reactions are defined:

Table 4-2 Fault reactions

List	PROFIdrive	Reaction	Description
NONE	-	None	No response when a fault occurs. **Note** 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.
OFF1	ON/ OFF	Brake along the ramp-function generator down ramp followed by pulse inhibit	**Speed control (p1300 = 20)** • n_set = 0 is input immediately to brake the drive along the ramp-function generator ramp down (p1121). • 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. Zero speed is detected if the actual speed drops below the threshold in p1226 or if the monitoring time (p1227) started when speed setpoint <= speed threshold (p1226) has expired.
OFF1_ DELAYED	-	As for OFF1, however delayed	Faults with this fault response only become effective after the delay time in p3136 has expired. The remaining time up to OFF1 is displayed in r3137.
OFF2	COAST STOP	Internal/external pulse disable	• Instantaneous pulse suppression, the drive “coasts” to a standstill. • The motor holding brake (if one is being used) is closed immediately. • Switching-on inhibited is activated.
OFF3	QUICK STOP	Brake along the OFF3 down ramp followed by pulse disable	**Speed control (p1300 = 20)** • n_set = 0 is input immediately to brake the drive along the OFF3 ramp down (p1135). • When zero speed is detected, the motor holding brake (if parameterized) is closed. The pulses are suppressed when the holding brake's closing time (p1217) expires. Zero speed is detected if the actual speed drops below the threshold in p1226 or if the monitoring time (p1227) started when speed setpoint <= speed threshold (p1226) has expired. • Switching-on inhibited is activated.
STOP2	-	n_set = 0	• n_set = 0 is input immediately to brake the drive along the OFF3 ramp down (p1135). • The drive remains in closed-loop speed control.
IASC/DCBRK	-	-	• 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. • 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).

Acknowledging faults

The list of faults and alarms specifies how to acknowledge each fault after the cause has been eliminated.

Table 4-3 Acknowledging faults

Acknowledgment	Description
POWER ON	The fault is acknowledged via a POWER ON (switch Control Unit off and on again). **Note** If this action has not removed the fault cause, the fault is displayed again immediately after power up.
IMMEDIATELY	Faults can be acknowledged as follows: 1 Set acknowledgment by parameter: p3981 = 0 --> 1 2 Acknowledging via binector inputs: p2103 BI: 1 Acknowledge faults p2104 BI: 2 Acknowledge faults p2105 BI: 3 Acknowledge faults 3 Acknowledging via a PROFIdrive control signal: STW1.7 = 0 --> 1 (edge) **Note** • These faults can also be acknowledged by a POWER ON operation. • If this action has not eliminated the fault cause, the fault will continue to be displayed after acknowledgment. • Safety Integrated faults The "Safe Torque Off" (STO) function must be deselected before these faults are acknowledged.
PULSE SUPPRESSION	The fault can only be acknowledged when the pulses are inhibited (r0899.11 = 0). The same options are available for acknowledging as described under IMMEDIATE acknowledgment.

4.1.2 Explanation of the list of faults and alarms

The data in the following example have been chosen at random. The information listed below is the maximum amount of information that a description can contain. Some of the information is optional.

The "List of faults and alarms (Page 763)" has the following layout:

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

Axxxxx (F, N)	**Fault location (optional): Name**
Message class:	Text of the message class (number according to PROFIdrive)
Reaction:	NONE
Acknowledgement:	NONE
Cause:	Description of possible causes.
	Fault value (r0949, interpret format): or alarm value (r2124, interpret format): (optional)
	Information about fault or alarm values (optional).
Remedy:	Description of possible remedies.

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

Axxxxx **Alarm xxxxx**
Axxxxx (F, N) **Alarm xxxxx (message type can be changed in F or N)**
Fxxxxx **Fault xxxxx**
Fxxxxx (A, N) **Fault xxxxx (message type can be changed in A or N)**
Nxxxxx **No message**
Nxxxxx (A) **No message (message type can be changed in A)**

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"

The optional brackets indicate whether the type specified for this message can be changed and which message types can be adjusted via parameters (p2118, p2119).

Information on reaction and acknowledgment is specified independently for a message with an adjustable message type (e.g. reaction to F, acknowledgment for F).

Note

You can change the default properties of a fault or alarm by setting parameters.

References: SINAMICS G120 Operating Instructions
Frequency Converter with CU230P-2 Control Units,
Section "Alarms, faults, and system messages"

The "List of faults and alarms (Page 763)" 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 value:

The information provided under the message value informs you about the composition of the fault/alarm value.

Example:

Message value: Component number: %1, fault cause: %2

This message value contains information about the component number and cause of the fault. The entries %1 and %2 are placeholders, which are filled appropriately in online operation (e.g. with the commissioning software).

Message class:

For each message, specifies the associated message class with the following structure:

Text of the message class (number according to PROFIdrive)

The message classes are transferred at different interfaces to higher-level control systems and their associated display and operating units.

The message classes that are available are shown in Table "Message classes and coding of various diagnostic interfaces (Page 757)". In addition to the text of the message class and their number according to PROFIdrive – as well as a brief help text regarding the cause and remedy – they also include information about the various diagnostic interfaces:

- PN (hex)

  Specifies the "Channel error type" of the PROFINET channel diagnostics.

  When activating the channel diagnostics, using the GSDML file, the texts listed in the table can be displayed.

- DS1 (dec)

  Specifies the bit number in date set DS1 of the diagnostic alarm for SIMATIC S7.

  When the diagnostic alarms are activated, the texts listed in the table can be displayed.

- DP (dec)

  Specifies the "Error type" of the channel-related diagnostics for PROFIBUS.

  When the channel diagnostics are activated, the texts listed in the standard and the GSD file can be displayed.

- ET 200 (dec)

  Specifies the "Error type" of the channel-related diagnostics for the SIMATIC ET 200pro FC-2 device.

  When the channel diagnostics are activated, the texts listed in the standard and the GSD file of the ET 200pro can be displayed.

- NAMUR (r3113.x)

  Specifies the bit number in parameter r3113.

For the interfaces DP, ET 200, NAMUR, in some instances, the message classes are combined.

Table 4-4 Message classes and coding of various diagnostic interfaces

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)**
Hardware/software errors (1) 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
Line fault (2) 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
Supply voltage fault (3) An electronics supply voltage fault (48 V, 24 V, 5 V …) was detected. Check the wiring. Check the voltage level.	9002	2	2 [1] 3 [2]	2 [1] 3 [2]	15
DC-link overvoltage (4) 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
Power electronics fault (5) 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
Overtemperature of the electronic component (6) The temperature in the component has exceeded the highest permissible limit. Check the ambient temperature / control cabinet ventilation.	9005	5	20	5	4
Ground fault / inter-phase short-circuit detected (7) 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
Motor overload (8) 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
Communication to the higher-level controller faulted (9) 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
Safety monitoring channel has detected an error (10) A safe operation monitoring function has detected an error.	9009	9	24	25	8

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)**
Actual position/speed value incorrect or not available (11) 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
Internal (DRIVE-CLiQ) communication faulted (12) 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
Infeed fault (13) 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
Braking controller / Braking Module faulted (14) 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
Line filter fault (15) 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
External measured value / signal state outside of the permissible range (16) 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
Application / technological function faulty (17) 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
Error in the parameterization/configuration/commissioning procedure (18) 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

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)**
General drive fault (19) Group fault. Determine the precise cause of the fault using the commissioning tool.	9012	18	9	9	15
Auxiliary unit fault (20) 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 753)".

Acknowledgment: Default acknowledgment (adjustable acknowledgment)

Specifies the default method of acknowledging faults after the cause has been eliminated.

The optional parentheses indicate whether the default acknowledgment can be changed and which acknowledgment can be adjusted via parameters (p2126, p2127).

Note

See Table "Acknowledging faults (Page 754)".

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 in the fault buffer in r0949[0...63] and specifies additional, more precise information about a fault.

Alarm value (r2124, format):

The alarm value specifies additional, more precise information about an alarm.

The alarm value is entered in the alarm buffer in r2124[0...63] and specifies additional, more precise information about an alarm.

Remedy:

Describes the methods available for eliminating the cause of the active fault or alarm.

⚠ WARNING
On a case for case basis, service 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 763)".

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 **Note** Faults that occur are automatically output as an alarm if the encoder is parameterized as a direct measuring system and does not intervene in the motor control.
33000	33999	DRIVE-CLiQ component encoder 3 **Note** Faults that occur are automatically output as an alarm if the encoder is parameterized as a direct measuring system and does not intervene in the motor control.
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

Table 4-5 Number ranges of faults and alarms, continued

of	To	Area
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, Version: 4711200, Language: eng
Objects: CU230P-2_BT, CU230P-2_CAN, CU230P-2_DP, CU230P-2_HVAC, CU230P-2_PN

F01000 Internal software error

Message class: Hardware/software error (1)
Reaction: OFF2
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- evaluate fault buffer (r0945).
- carry out a POWER ON (switch-off/switch-on) for all components.
- if required, check the data on the non-volatile memory (e.g. memory card).
- upgrade firmware to later version.
- contact Technical Support.
- replace the Control Unit.

F01001 FloatingPoint exception

Message class: Hardware/software error (1)
Reaction: OFF2
Acknowledge: POWER ON
Cause: An exception occurred during an operation with the FloatingPoint data type.
The error may be caused by the basic system or an OA application (e.g. FBLOCKS, DCC).
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Note:
Refer to r9999 for further information about this fault.
r9999[0]: Fault number.
r9999[1]: Program counter at the time when the exception occurred.
r9999[2]: Cause of the FloatingPoint exception.
Bit 0 = 1: Operation invalid
Bit 1 = 1: Division by zero
Bit 2 = 1: Overflow
Bit 3 = 1: Underflow
Bit 4 = 1: Inaccurate result
Remedy:
- carry out a POWER ON (switch-off/switch-on) for all components.
- check configuration and signals of the blocks in FBLOCKS.
- check configuration and signals of DCC charts.
- upgrade firmware to later version.
- contact Technical Support.

F01002 Internal software error

Message class: Hardware/software error (1)
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: An internal software error has occurred.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

F01003	**Acknowledgment 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 (switch-off/switch-on) for all components. - contact Technical Support.

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 Technical Support. 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.

A01009 (N) CU: Control module overtemperature

Message class: Overtemperature of the electronic components (6)
Reaction: NONE
Acknowledge: NONE
Cause: The temperature (r0037[0]) of the control module (Control Unit) has exceeded the specified limit value.
Remedy: - check the air intake for the Control Unit.
- check the Control Unit fan.
Note:
The alarm is automatically withdrawn once the limit value has been fallen below.

F01010 Drive type unknown

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An unknown drive type was found.
Remedy: - replace Power Module.
- carry out a POWER ON (switch-off/switch-on).
- upgrade firmware to later version.
- contact Technical Support.

F01015 Internal software error

Message class: Hardware/software error (1)
Reaction: OFF2
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

A01016 (F) Firmware changed

Message class: Hardware/software error (1)
Reaction: NONE
Acknowledge: NONE
Cause: At least one firmware file in the directory was illegally changed on the non-volatile memory (memory card/device memory) with respect to the version when shipped from the factory.
Alarm value (r2124, interpret decimal):
0: Checksum of one file is incorrect.
1: File missing.
2: Too many files.
3: Incorrect firmware version.
4: Incorrect checksum of the back-up file.
Remedy: For the non-volatile memory for the firmware (memory card/device memory), restore the delivery condition.
Note:
The file involved can be read out using parameter r9925.
The status of the firmware check is displayed using r9926.
See also: r9925 (Firmware file incorrect), r9926 (Firmware check status)

A01017 Component lists changed

Message class: Hardware/software error (1)

Reaction: NONE

Acknowledge: NONE

Cause: On the memory card, one file in the directory /SIEMENS/SINAMICS/DATA or /ADDON/SINAMICS/DATA has been illegally changed with respect to that supplied from the factory. No changes are permitted in this directory.

Alarm value (r2124, interpret decimal):

zyx dec: x = Problem, y = Directory, z = File name

x = 1: File does not exist.

x = 2: Firmware version of the file does not match the software version.

x = 3: File checksum is incorrect.

y = 0: Directory /SIEMENS/SINAMICS/DATA/

y = 1: Directory /ADDON/SINAMICS/DATA/

z = 0: File MOTARM.ACX

z = 1: File MOTSRM.ACX

z = 2: File MOTSLM.ACX

z = 3: File ENCDATA.ACX

z = 4: File FILTDATA.ACX

z = 5: File BRKDATA.ACX

z = 6: File DAT_BEAR.ACX

z = 7: File CFG_BEAR.ACX

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 (switch-off/switch-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)

A01021 Removable data medium as USB data storage medium from the PC used

Message class: General drive fault (19)
Reaction: NONE
Acknowledge: NONE
Cause: The removable data medium is used as USB data storage medium from a PC
As a consequence, the drive cannot access the removable data medium. When backing up, the configuration data cannot be saved on the removable data medium.
Alarm value (r2124, 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)
Remedy: Deactivate the USB connection to the PC and back up the configuration data.
Note:
The alarm is automatically canceled when disconnecting the USB connection or when removing the removable data medium.
See also: r9401 (Safely remove memory card status)

F01023 Software timeout (internal)

Message class: Hardware/software error (1)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An internal software timeout has occurred.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

A01028 (F) Configuration error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: The parameterization that was downloaded was generated with a different module type (Order No., MLFB).
Remedy: Save parameters in a non-volatile fashion (p0971 = 1).

F01030 Sign-of-life failure for master control

Message class: Communication error to the higher-level control system (9)
Reaction: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Acknowledge: IMMEDIATELY
Cause: For active PC master control, no sign-of-life was received within the monitoring time.
The master control was returned to the active BICO interconnection.
Remedy: Set the monitoring time higher at the PC or, if required, completely disable the monitoring function.
For the commissioning software, the monitoring time is set as follows:
<Drive> -> Commissioning -> Control panel -> Button "Fetch master control" -> A window is displayed to set the monitoring time in milliseconds.

Notice:

The monitoring time should be set as short as possible. A long monitoring time means a late response when the communication fails!

F01033 Units changeover: Reference parameter value invalid

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: When changing over the units to the referred representation type, it is not permissible for any of the required reference parameters to be equal to 0.0

Fault value (r0949, parameter):

Reference parameter whose value is 0.0.

See also: p0505 (Selecting the system of units), p0595 (Technological unit selection)

Remedy: Set the value of the reference parameter to a number different than 0.0.

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.

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").

See also: p0971 (Save parameters)

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 PSxxxyyy.ACX associated with a drive object cannot be found.
Fault value (r0949, interpret hexadecimal):
Byte 1: yyy in the file name PSxxxyyy.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 PSxxxyyy.ACX or PTxxxyyy.ACX files from the non-volatile memory.
Fault value (r0949, interpret hexadecimal):
Byte 1: yyy in the file name PSxxxyyy.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. This means that 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 PSxxxyyy.*** in the non-volatile memory was unsuccessful.
- in the directory /USER/SINAMICS/DATA/ at least one parameter back-up file PSxxxyyy.*** has the "read only" file attribute and cannot be overwritten.
- there is not sufficient free memory space available.
- the non-volatile memory is defective and cannot be written to.

Fault value (r0949, interpret hexadecimal):
dcba hex
a = yyy in the file names PSxxxyyy.***
a = 000 --> consistency back-up file
a = 001 ... 062 --> drive object number
a = 099 --> PROFIBUS parameter back-up file
b = xxx in the file names PSxxxyyy.***
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.

Remedy: - check the file attribute of the files (PSxxxyyy.***, CAxxxyyy.***, CCxxxyyy.***) and, if required, change from "read only" to "writeable".
- check the free memory space in the non-volatile memory. Approx. 80 kbyte of free memory space is required for every drive object in the system.
- replace the memory card or Control Unit.

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 (switch-off/switch-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.

F01043 Fatal error at project download

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Reaction: OFF2 (OFF1, OFF3)

Acknowledge: IMMEDIATELY

Cause: A fatal error was detected when downloading a project using the commissioning software.
Fault value (r0949, interpret decimal):
1: Device status cannot be changed to Device Download (drive object ON?).
2: Incorrect drive object number.
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.

Remedy: - use the current version of the commissioning software.
- modify the offline project and download again (e.g. compare the motor and Power Module in the offline project and on the drive).
- change the drive state (is a drive rotating or is there a message/signal?).
- carefully note any other messages/signals and remove their cause.
- boot from previously saved files (switch-off/switch-on or p0970).

F01044 CU: Descriptive data error

Message class: Hardware/software error (1)

Reaction: OFF2

Acknowledge: POWER ON

Cause: An error was detected when loading the descriptive data saved in the non-volatile memory.

Remedy: Replace the memory card or Control Unit.

A01045 Configuring data invalid

Message class: Hardware/software error (1)

Reaction: NONE

Acknowledge: NONE

Cause: An error was detected when evaluating the parameter files PSxxxyyy.ACX, PTxxxyyy.ACX, CAxxxyyy.ACX, or CCxxxyyy.ACX saved in the non-volatile memory. Because of this, under certain circumstances, several of the saved parameter values were not able to be accepted. Also see r9406 up to r9408.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy: - check the parameters displayed in r9406 up to r9408, and correct these if required.

- Restore the factory setting using (p0970 = 1) and re-load the project into the drive unit.

Then save the parameterization in STARTER using the function "Copy RAM to ROM" or with p0971 = 1. This overwrites the incorrect parameter files in the non-volatile memory – and the alarm is withdrawn.

See also: r9406 (PS file parameter number parameter not transferred), r9407 (PS file parameter index parameter not transferred), r9408 (PS file fault code parameter not transferred)

A01049 It is not possible to write to file

Message class: Hardware/software error (1)

Reaction: NONE

Acknowledge: NONE

Cause: It is not possible to write into a write-protected file (PSxxxxxx.acx). The write request was interrupted.

Alarm value (r2124, interpret decimal):

Drive object number.

Remedy: Check whether the "write protected" attribute has been set for the files in the non-volatile memory under .../USER/SINAMICS/DATA/... When required, remove write protection and save again (e.g. set p0971 to 1).

F01054 CU: System limit exceeded

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: At least one system overload has been identified.

Fault value (r0949, interpret decimal):

1: Computing time load too high (r9976[1]).

5: Peak load too high (r9976[5]).

Note:

As long as this fault is present, it is not possible to save the parameters (p0971).

Remedy: For fault value = 1, 5:

- reduce the computing time load of the drive unit (r9976[1] and r9976[5]) to under 100 %.
- check the sampling times and adjust if necessary (p0115, p0799, p4099).
- deactivate function modules.
- deactivate drive objects.
- remove drive objects from the target topology.
- note the DRIVE-CLiQ topology rules and if required, change the DRIVE-CLiQ topology.

When using the Drive Control Chart (DCC) or free function blocks (FBLOCKS), the following applies:

- the computing time load of the individual run-time groups on a drive object can be read out in r21005 (DCC) or r20005 (FBLOCKS).
- if necessary, the assignment of the run-time group (p21000, p20000) can be changed in order to increase the sampling time (r21001, r20001).
- if necessary, reduce the number of cyclically calculated blocks (DCC) and/or function blocks (FBLOCKS).

A01066 Buffer memory: 70% fill level reached or exceeded

Message class: General drive fault (19)

Reaction: NONE

Acknowledge: NONE

Cause: The non-volatile buffer memory for parameter changes is filled to at least 70%.

This can also occur if the buffer memory is active (p0014 = 1) and parameters are continually changed via a fieldbus system.

Remedy: If required, deactivate 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
- switch-off/switch-on Control Unit

A01067	Buffer memory: 100 % fill level reached
Message class:	General drive fault (19)
Reaction:	NONE
Acknowledge:	NONE
Cause:	The non-volatile buffer memory for parameter changes is filled to 100%. All additional parameter changes will no longer be taken into account in the non-volatile buffer memory. However, parameter changes can still be made in the volatile memory (RAM). This can also occur if the buffer memory is active (p0014 = 1) and parameters are continually changed via a fieldbus system.
Remedy:	If required, deactivate 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 - switch-off/switch-on Control Unit

F01068	CU: Data memory memory overflow
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	The utilization for a data memory area is too large. Fault value (r0949, interpret binary): Bit 0 = 1: High-speed data memory 1 overloaded Bit 1 = 1: High-speed data memory 2 overloaded Bit 2 = 1: High-speed data memory 3 overloaded Bit 3 = 1: High-speed data memory 4 overloaded
Remedy:	- deactivate the function module. - deactivate drive object. - remove the drive object from the target topology.

A01069	Parameter backup and device incompatible
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	NONE
Cause:	The parameter backup on the memory card and the drive unit do not match. The module boots with the factory settings. Example: Devices A and B. are not compatible and a memory card with the parameter backup for device A is inserted in device B.
Remedy:	- insert a memory card with compatible parameter backup and carry out a POWER ON. - insert a memory card without parameter backup and carry out a POWER ON. - if required, withdraw the memory card and carry out POWER ON. - save the parameters (p0971 = 1).

F01072	Memory card restored from the backup copy
Message class:	General drive fault (19)
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	The Control Unit was switched-off while writing to the memory card. This is why the visible partition became defective. After switching on, the data from the non-visible partition (backup copy) were written to the visible partition.
Remedy:	Check that the firmware and parameterization is up-to-date.

A01073 (N) POWER ON required for backup copy on memory card

Message class: General drive fault (19)
Reaction: NONE
Acknowledge: NONE
Cause: The parameter assignment on the visible partition of the memory card has changed.
In order that the backup copy on the memory card is updated on the non-visible partition, it is necessary to carry out a POWER ON or hardware reset (p0972) of the Control Unit.
Note:
It is possible that a new POWER ON is requested via this alarm (e.g. after saving with p0971 = 1).
Remedy: - carry out a POWER ON (power off/on) for the Control Unit.
- carry out a hardware reset (RESET button, p0972).

A01098 RTC: Date and time setting required

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: The power supply for the Control Unit was interrupted for an extended period. The date and time displayed on the real-time clock are no longer accurate.
Note:
This alarm is only output when p8405 = 1 (factory setting).
See also: p8405 (Activate/deactivate RTC alarm A01098)
Remedy: Set the date and time on the real-time clock.
Note:
RTC: Real-time clock
See also: p8400 (RTC time), p8401 (RTC date)

N01101 (A) CU: memory card not available

Message class: Hardware/software error (1)
Reaction: NONE
Acknowledge: NONE
Cause: The memory card is not available for the drive.
Remedy: Insert a memory card.
If Starter is not active, interrupt the USB connection to the PC

F01105 (A) CU: Insufficient memory

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: OFF1
Acknowledge: POWER ON
Cause: Too many data sets are configured on this Control Unit.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - reduce the number of data sets.

F01107 Save to memory card unsuccessful

Message class: Hardware/software error (1)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A data save to the memory card was not able to be successfully carried out.
- Memory card defective
- insufficient space on memory card.
Fault value (r0949, interpret decimal):
1: The file on the RAM was not able to be opened.
2: The file on the RAM was not able to be read.
3: A new directory could not be created on the memory card.

	4: A new file could not be created on the memory card.
	5: A new file could not be written on the memory card.
Remedy:	- try to save again.
	- replace the memory card or Control Unit.

F01112 CU: Power unit not permissible

Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	The connected power unit cannot be used together with this Control Unit.
	Fault value (r0949, interpret decimal):
	1: Power unit is not supported (e.g. PM340).
Remedy:	Replace the power unit that is not permissible by a component that is permissible.

F01120 (A) Terminal initialization has failed

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 (switch-off/switch-on) for all components.
	- upgrade firmware to later version.
	- contact Technical Support.
	- replace the Control Unit.

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:	- switch off 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 Technical Support.

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.

A01251	**CU: CU-EEPROM incorrect read-write data**
Message class:	Hardware/software error (1)
Reaction:	NONE
Acknowledge:	NONE
Cause:	Error when reading the read-write data of the EEPROM in the Control Unit. Alarm value (r2124, interpret decimal): Only for internal Siemens troubleshooting.
Remedy:	For alarm value r2124 < 256, the following applies: - carry out a POWER ON. - replace the Control Unit. For alarm value r2124 >= 256, the following applies: - clear the fault memory (p0952 = 0). - replace the Control Unit.

F01257	**CU: Firmware version out of date**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	OFF2
Acknowledge:	POWER ON
Cause:	The Control Unit firmware is too old. Fault value (r0949, interpret hexadecimal): bbbbbbaa hex: aa = unsupported component aa = 01 hex = 1 dec: The firmware being used does not support the Control Unit. aa = 02 hex = 2 dec: The firmware being used does not support the Control Unit. aa = 03 hex = 3 dec: The firmware being used does not support the Power Module. aa = 04 hex = 4 dec: The firmware being used does not support the Control Unit.
Remedy:	For 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.

F01340	**Topology: Too many components on one line**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	For the selected communications clock cycle, too many DRIVE-CLiQ components are connected to one line of the Control Unit. Fault value (r0949, interpret hexadecimal): xyy hex: x = fault cause, yy = component number or connection number. 1yy: The communications clock cycle of the DRIVE-CLiQ connection on the Control Unit is not sufficient for all read transfers. 2yy: The communications clock cycle of the DRIVE-CLiQ connection on the Control Unit is not sufficient for all write transfers. 3yy: Cyclic communication is fully utilized. 4yy: The DRIVE-CLiQ cycle starts before the earliest end of the application. An additional dead time must be added to the control. Sign-of-life errors can be expected. The conditions of operation with a current controller sampling time of 31.25 µs have not been maintained.

5yy:
Internal buffer overflow for net data of a DRIVE-CLiQ connection.
6yy:
Internal buffer overflow for receive data of a DRIVE-CLiQ connection.
7yy:
Internal buffer overflow for send data of a DRIVE-CLiQ connection.
8yy:
The component clock cycles cannot be combined with one another
900:
The lowest common multiple of the clock cycles in the system is too high to be determined.
901:
The lowest common multiple of the clock cycles in the system cannot be generated with the hardware.

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.
For 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.
For 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.
For 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.

F01505 (A) BICO: Interconnection cannot be established

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A PROFIdrive telegram has been set (p0922).
An interconnection contained in the telegram was not able to be established.
Fault value (r0949, interpret decimal):
Parameter receiver that should be changed.
Remedy: Establish another interconnection.

F01510 BICO: Signal source is not float type

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The requested connector output does not have the correct data type. This interconnection is not established.
Fault value (r0949, interpret decimal):
Parameter number to which an interconnection should be made (connector output).
Remedy: Interconnect this connector input with a connector output having a float data type.

F01511 (A)	BICO: Interconnection with different scalings
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	The requested BICO interconnection was established. However, a conversion is made between the BICO output and BICO input using the reference values. - the BICO output has different normalized units than the BICO input. - message only for interconnections within a drive object. Example: The BICO output has, as normalized unit, voltage and the BICO input has current. This means that the factor p2002/p2001 is calculated between the BICO output and the BICO input. p2002: contains the reference value for current p2001: contains the reference value for voltage Fault value (r0949, interpret decimal): Parameter number of the BICO input (signal sink).
Remedy:	Not necessary.

F01512	BICO: No scaling available
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	OFF2
Acknowledge:	POWER ON
Cause:	An attempt was made to determine a conversion factor for a scaling that does not exist. Fault value (r0949, interpret decimal): Unit (e.g. corresponding to SPEED) for which an attempt was made to determine a factor.
Remedy:	Apply scaling or check the transfer value.

F01513 (N, A)	BICO: Interconnection cross DO with different scalings
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	The requested BICO interconnection was established. However, a conversion is made between the BICO output and BICO input using the reference values. An interconnection is made between different drive objects and the BICO output has different normalized units than the BICO input or the normalized units are the same but the reference values are different. Example 1: BICO output with voltage normalized unit, BICO input with current normalized unit, BICO output and BICO input lie in different drive objects. This means that the factor p2002/p2001 is calculated between the BICO output and the BICO input. p2002: contains the reference value for current p2001: contains the reference value for voltage Example 2: BICO output with voltage normalized unit in drive object 1 (DO1), BICO input with voltage normalized unit in drive object 2 (DO2). The reference values for voltage (p2001) of the two drive objects have different values. This means that the factor p2001(DO1)/p2001(DO2) is calculated between the BICO output and the BICO input. p2001: contains the reference value for voltage, drive objects 1, 2 Fault value (r0949, interpret decimal): Parameter number of the BICO input (signal sink).
Remedy:	Not necessary.

A01514 (F)	**BICO: Error when writing during a reconnect**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	NONE
Cause:	During a reconnect operation (e.g. while booting or downloading - but can also occur in normal operation) a parameter was not able to be written to. Example: When writing to BICO input with double word format (DWORD), in the second index, the memory areas overlap (e.g. p8861). The parameter is then reset to the factory setting. Alarm value (r2124, interpret decimal): Parameter number of the BICO input (signal sink).
Remedy:	Not necessary.

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).

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 (switch-off/switch-on). - check the electrical cabinet design and cable routing for EMC compliance - check whether an impermissible voltage is connected at one of the digital outputs. - check whether a digital output is loaded with an impermissible current. - upgrade firmware to later version. - contact Technical Support.

A01900 (F)	**PROFIBUS: Configuration telegram error**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	NONE
Cause:	A PROFIBUS master attempts to establish a connection using an incorrect configuring telegram. Alarm value (r2124, interpret decimal): 2: Too many PZD data words for input or output. The number of possible PZD is specified by the number of indices in r2050/p2051. 3: Uneven number of bytes for input or output. 211: Unknown parameterizing block. Additional values: Only for internal Siemens troubleshooting.

Remedy: Check the bus configuration on the master and the slave sides.
For alarm value = 2:
Check the number of data words for input and output.
For alarm value = 211:
Ensure offline version <= online version.

F01910 (N, A) Fieldbus interface setpoint timeout

Message class: Communication error to the higher-level control system (9)
Reaction: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Acknowledge: IMMEDIATELY
Cause: The reception of setpoints from the fieldbus interface has been interrupted.
- bus connection interrupted.
- communication partner switched off.
CU230P-2 DP:
- PROFIBUS master set into the STOP state.
See also: p2040 (Fieldbus interface monitoring time), p2047 (PROFIBUS additional monitoring time)
Remedy: Ensure bus connection has been established and switch on communication partner.
CU230P-2 BT, CU230P-2 HVAC:
- if required, adapt p2040.
CU230P-2 DP:
- set the PROFIBUS master to the RUN state.
- if the error is repeated, check the set response monitoring in the bus configuration (HW Config).
- slave redundancy: For operation on a Y link, it must be ensured that "DP alarm mode = DPV1" is set in the slave parameterization.

A01920 (F) PROFIBUS: Interruption cyclic connection

Message class: Communication error to the higher-level control system (9)
Reaction: NONE
Acknowledge: NONE
Cause: The cyclic connection to the PROFIBUS master is interrupted.
Remedy: Establish the PROFIBUS connection and activate the PROFIBUS master in the cyclic mode.
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 interface protocol selection)

A01945 PROFIBUS: Connection to the Publisher failed

Message class: Communication error to the higher-level control system (9)
Reaction: NONE
Acknowledge: NONE
Cause: For PROFIBUS peer-to-peer data transfer, the connection to at least one Publisher has failed.
Alarm value (r2124, interpret binary):
Bit 0 = 1: Publisher with address in r2077[0], connection failed.
...
Bit 15 = 1: Publisher with address in r2077[15], connection failed.
Remedy: Check the PROFIBUS cables.
See also: r2077 (PROFIBUS diagnostics peer-to-peer data transfer addresses)

F01946 (A) PROFIBUS: Connection to the Publisher aborted

Message class: Communication error to the higher-level control system (9)

Reaction: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The connection to at least one Publisher for PROFIBUS peer-to-peer data transfer in cyclic operation has been aborted.

Fault value (r0949, interpret binary):

Bit 0 = 1: Publisher with address in r2077[0], connection aborted.

...

Bit 15 = 1: Publisher with address in r2077[15], connection aborted.

Remedy: - check the PROFIBUS cables.

- check the state of the Publisher that has the aborted connection.

See also: r2077 (PROFIBUS diagnostics peer-to-peer data transfer addresses)

A02050 Trace: Start not possible

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Reaction: NONE

Acknowledge: NONE

Cause: The trace has already been started.

Remedy: Stop the trace and, if necessary, start again.

A02051 Trace: recording not possible as a result of know-how protection

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Reaction: NONE

Acknowledge: NONE

Cause: 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

Remedy: - Temporarily activate or deactivate know-how protection (p7766).

- include the signal in the OEM exception list (p7763, p7764).

- Where relevant do not record the signal.

See also: p7763 (KHP OEM exception list number of indices for p7764), p7764 (KHP OEM exception list)

A02055 Trace: Recording time too short

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Reaction: NONE

Acknowledge: NONE

Cause: The trace duration is too short.

The minimum is twice the value of the trace clock cycle.

Remedy: Check the selected recording time and, if necessary, adjust.

A02056 Trace: Recording cycle too short

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Reaction: NONE

Acknowledge: NONE

Cause: The selected recording clock cycle is lower than the basic clock cycle 500µs.

Remedy: Increase the value for the trace cycle.

A02057 Trace: Time slice clock cycle invalid

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: The time slice clock cycle selected does not match any of the existing time slices.
Remedy: Enter an existing time slice clock cycle. The existing time slices can be read out via p7901.
See also: r7901 (Sampling times)

A02058 Trace: Time slice clock cycle for endless trace not valid

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: The selected time slice clock cycle cannot be used for the endless trace
Remedy: Enter the clock cycle of an existing time slice with a cycle time >= 2 ms for up to 4 recording channels or >= 4 ms from 5 recording channels per trace.
The existing time slices can be read out via p7901.
See also: r7901 (Sampling times)

A02059 Trace: Time slice clock cycle for 2 x 8 recording channels not valid

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: The selected time slice clock cycle cannot be used for more than 4 recording channels.
Remedy: Enter the clock cycle of an existing time slice with a cycle time >= 4 ms or reduce the number of recording channels to 4 per trace.
The existing time slices can be read out via p7901.
See also: r7901 (Sampling times)

A02060 Trace: Signal to be traced missing

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: - a signal to be traced was not specified.
- the specified signals are not valid.
Remedy: - specify the signal to be traced.
- check whether the relevant signal can be traced.

A02061 Trace: Invalid signal

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: - the specified signal does not exist.
- the specified signal can no longer be traced (recorded).
Remedy: - specify the signal to be traced.
- check whether the relevant signal can be traced.

A02062 Trace: Invalid trigger signal

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: - a trigger signal was not specified.
- the specified signal does not exist.
- the specified signal is not a fixed-point signal.
- the specified signal cannot be used as a trigger signal for the trace.
Remedy: Specify a valid trigger signal.

A02063	**Trace: Invalid data type**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	NONE
Cause:	The specified data type to select a signal using a physical address is invalid.
Remedy:	Use a valid data type.

A02070	**Trace: Parameter cannot be changed**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	NONE
Cause:	The trace parameter settings cannot be changed when the trace is active.
Remedy:	- stop the trace before parameterization. - if required, start the trace.

A02075	**Trace: Pretrigger time too long**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	NONE
Cause:	The selected pretrigger time must be shorter than the trace time.
Remedy:	Check the pretrigger time setting and change if necessary.

F02080	**Trace: Parameterization deleted due to unit changeover**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	The trace parameterization in the drive unit was deleted due to a unit changeover or a change in the reference parameters.
Remedy:	Restart trace.

A02095	**MTrace 0: multiple trace cannot be activated**
Message 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 0): - measuring function - long-time trace - trigger condition "immediate recording start" (IMMEDIATE) - trigger condition "start with function generator" (FG_START)
Remedy:	- if required, deactivate the multiple trace (p4840[0] = 0). - deactivate function or setting that is not permissible

A02096	**MTrace 0: 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 0). A multiple trace is not started or is canceled. Alarm value (r2124, interpret decimal): 1: Memory card cannot be accessed. - card is not inserted or is blocked by a mounted USB drive.

3: data save operation to slow.
- a second trace has been completed before the measurement results of the first trace were able to be saved.
- writing the measurement result files to the card is blocked by the parameter save.
4: Data save operation canceled.
- for instance, the file required for the data save operation was not able to be found.

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 to slow.
- a second trace has been completed before the measurement results of the first trace were able to be saved.
- writing the measurement result files to the card is blocked by the parameter save.
4: Data save operation canceled.
- for instance, the file required for the data save operation was not able to be found.

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.

A02150 OA: Application cannot be loaded

Message class: Hardware/software error (1)
Reaction: NONE
Acknowledge: NONE
Cause: 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.
Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.
For alarm value = 16:
Load a compatible DCB user library (compatible to the interface of the DCC standard library).
Note:
OA: Open Architecture
DCB: Drive Control Block
DCC: Drive Control Chart

F02151 (A) OA: Internal software error

Message class: Hardware/software error (1)
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An internal software error has occurred within an OA application.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - carry out a POWER ON (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.
- replace the Control Unit.
Note:
OA: Open Architecture

F02152 (A) OA: Insufficient memory

Message class: Hardware/software error (1)
Reaction: OFF1
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Too many functions have been configured on this Control Unit (e.g. too many drives, function modules, data sets, OA applications, blocks, etc.).
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - change the configuration on this Control Unit (e.g. fewer drives, function modules, data sets, OA applications, blocks, etc.).
- use an additional Control Unit.
Note:
OA: Open Architecture

F03000 NVRAM fault on action

Message class: Hardware/software error (1)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A fault occurred during execution of action p7770 = 1 or 2 for the NVRAM data.
Fault value (r0949, interpret hexadecimal):
yyxx hex: yy = fault cause, xx = application ID

yy = 1:
The action p7770 = 1 is not supported by this version if Drive Control Chart (DCC) is activated for the drive object concerned.
yy = 2:
The data length of the specified application is not the same in the NVRAM and the backup.
yy = 3:
The data checksum in p7774 is not correct.
yy = 4:
No data available to load.

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 (switch-off/switch-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 value of the analog input has undershot the threshold value parameterized in p0761[0...3].
p0756[0]: Analog input 0
p0756[1]: Analog input 1
p0756[2]: Analog input 2
Fault value (r0949, interpret decimal):
yxxx dec
y = analog input (0 = analog input 0 (AI 0), 1 = analog input 1 (AI 1), 2 = analog input 2 (AI 2))
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)
p0756[0...2] = 3 (4 ... 20 mA 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.
Note:
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: - switch-off/switch-on 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.

A03520 (F, N) Temperature sensor fault

Message class: External measured value / signal state outside the permissible range (16)
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.
It is expected that one of the following temperature sensors is connected via an analog input:
- LG-Ni1000 (p0756[2...3] = 6)
- PT1000 (p0756[2...3] = 7)
- DIN Ni 1k (p0756[2...3] = 10)

Alarm value (r2124, interpret decimal):
33: Analog input 2 (AI2) wire breakage or sensor not connected.
34: Analog input 2 (AI2) measured resistance too low (short circuit).
49: Analog input 3 (AI3) wire breakage or sensor not connected.
50: Analog input 3 (AI3) measured resistance too low (short circuit).
See also: p0756 (CU analog inputs type)

Remedy:
- make sure that the sensor is connected correctly.
- check the sensor for correct function and if required, replace.
- change over the analog input to type "no sensor connected" (p0756 = 8).

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 heat sink temperature exceeds the value set in p0292[0], then fault F30004 is output.

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 temperature of the barrier layer increases by the value set in p0292[1], then fault F30025 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?
- 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.

A05003 (N) Power unit: Internal overtemperature

Message class: Power electronics faulted (5)
Reaction: NONE
Acknowledge: NONE
Cause: For chassis power units, the following applies:
The alarm threshold for internal overtemperature has been reached.
If the temperature inside the power unit increases by an additional 5 K, then fault F30036 is triggered.
Remedy: Check the following:
- is the ambient temperature within the defined limit values?
- has the fan failed? Check the direction of rotation.

A05004 (N) Power unit: Rectifier overtemperature

Message 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)
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 precharging has been completed. Permissible range: 1.16 * p0210 < r0070 < 1.6 * p0210 Note: The fault can only be acknowledged when the drive is switched off. 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 asymmetry**
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 asymmetry (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:	KTY84/PT1000: The motor temperature has exceeded the fault threshold (p0605) or a timer after the alarm threshold was exceeded (p0604) has expired. The response parameterized in p0610 becomes active. The alarm is withdrawn if the response threshold for wire breakage or sensor not connected is exceeded (R > 2120 Ohm). PTC or bimetallic NC contact: The response threshold of 1650 Ohm was exceeded or the NC contact opened and a timer has expired. The response parameterized in p0610 becomes active. Possible causes: - motor is overloaded. - motor ambient temperature too high. - wire breakage or sensor not connected. Fault value (r0949, interpret decimal): 200: Motor temperature model 1 (I2t): temperature too high. See also: p0604, p0605, p0612, p0613, 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, 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.
300:
Motor temperature model 3: temperature too high.
See also: r0034 (Motor utilization thermal), p0605 (Mot_temp_mod 1/2/sensor threshold and temperature value), p0611 (I2t motor model thermal time constant), p0612 (Mot_temp_mod activation), p0613 (Mot_temp_mod 1/3 ambient temperature)

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 alarm threshold.
Motor temperature model 3:
- check the motor type.
- check alarm threshold.
- check the model parameters.
See also: r0034 (Motor utilization thermal), p0605 (Mot_temp_mod 1/2/sensor threshold and temperature value), p0611 (I2t motor model thermal time constant), p0612 (Mot_temp_mod activation)

A07014 (N) Drive: Motor temperature model configuration alarm

Message class: Motor overload (8)

Reaction: NONE

Acknowledge: NONE

Cause: 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)

Remedy: - set the response for motor overtemperature to "Alarm and fault, no reduction of I_max" (p0610 = 2).
See also: p0610 (Motor overtemperature response)

A07015 Drive: Motor temperature sensor alarm

Message class: External measured value / signal state outside the permissible range (16)

Reaction: NONE

Acknowledge: NONE

Cause: An error was detected when evaluating the temperature sensor set in p0601.
With the fault, the time in p0607 is started. If the fault is still present after this time has expired, then fault F07016 is output; however, at the earliest, 50 ms after alarm A07015.
Possible causes:
- wire breakage or sensor not connected (KTY: R > 2120 Ohm, PT1000: R > 2120 Ohm).
- measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm, PT1000: R < 603 Ohm).

Remedy: - make sure that the sensor is connected correctly.
- check the parameterization (p0601).
See also: r0035 (Motor temperature), p0601 (Motor temperature sensor type)

F07016 Drive: Motor temperature sensor fault

Message class: External measured value / signal state outside the permissible range (16)
Reaction: OFF1 (NONE, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: An error was detected when evaluating the temperature sensor set in p0601.
Possible causes:
- wire breakage or sensor not connected (KTY: R > 2120 Ohm, PT1000: R > 2120 Ohm).
- measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm, PT1000: R < 603 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.
Remedy: - make sure that the sensor is connected correctly.
- check the parameterization (p0601).
- induction motors: Deactivate temperature sensor fault (p0607 = 0).
See also: r0035 (Motor temperature), p0601 (Motor temperature sensor type)

F07080 Drive: Incorrect control parameter

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The closed-loop control parameters have been parameterized incorrectly (e.g. p0356 = L_spread = 0).
Fault value (r0949, interpret decimal):
The fault value includes the parameter number involved.
See also: p0310, p0311, p0341, p0344, p0350, p0354, p0356, p0357, p0358, p0360, p0640, p1082, p1300
Remedy: Modify the parameter indicated in the fault value (r0949) (e.g. p0640 = current limit > 0).
See also: p0311, p0341, p0344, p0350, p0354, p0356, p0358, p0360, p0640, p1082

F07082 Macro: Execution not possible

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

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
Remedy: - check whether the file is saved in the appropriate directory on the memory card.

F07084 Macro: Condition for WaitUntil not fulfilled

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The WaitUntil condition set in the macro was not fulfilled in a certain number of attempts.
Fault value (r0949, interpret decimal):
Parameter number for which the condition was set.
Remedy: Check and correct the conditions for the WaitUntil loop.

F07086 Units changeover: Parameter limit violation due to reference value change

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A reference parameter was changed in the system. This resulted in the fact that for the parameters involved, the selected value was not able to be written in the per unit notation.
The values of the parameters were set to the corresponding violated minimum limit/maximum limit or to the factory setting.
Possible causes:
- the steady-state minimum limit/maximum limit or that defined in the application was violated.
Fault value (r0949, parameter):
Diagnostics parameter to display the parameters that were not able to be re-calculated.
See also: p0304, p0305, p0310, p0596, p2000, p2001, p2002, p2003, r2004
Remedy: Check the adapted parameter value and if required correct.

F07088 Units changeover: Parameter limit violation due to units changeover

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A changeover of units was initiated. This resulted in a violation of a parameter limit
Possible causes for the violation of a parameter limit:
- When rounding off a parameter corresponding to its decimal places, the steady-state minimum limit or maximum limit was violated.
- inaccuracies for the data type "FloatingPoint".

In these cases, when the minimum limit is violated then the parameter value is rounded up and when the maximum limited is violated the parameter value is rounded down.

Fault value (r0949, interpret decimal):

Diagnostics parameter r9451 to display all parameters whose value had to be adapted.

See also: p0100 (IEC/NEMA mot stds), p0505 (Selecting the system of units), p0595 (Technological unit selection)

Remedy: Check the adapted parameter values and if required correct.

See also: r9451 (Units changeover adapted parameters)

A07089 Changing over units: Function module activation is blocked because the units have been changed over

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Reaction: NONE

Acknowledge: NONE

Cause: An attempt was made to activate a function module. This is not permissible if the units have already been changed over.

See also: p0100 (IEC/NEMA mot stds), p0505 (Selecting the system of units)

Remedy: Restore units that have been changed over to the factory setting.

A07094 General parameter limit violation

Message class: Hardware/software error (1)

Reaction: NONE

Acknowledge: NONE

Cause: As a result of the violation of a parameter limit, the parameter value was automatically corrected.

Minimum limit violated --> parameter is set to the minimum value.

Maximum limit violated --> parameter is set to the maximum value.

Alarm value (r2124, interpret decimal):

Parameter number, whose value had to be adapted.

Remedy: Check the adapted parameter values and if required correct.

A07200 Drive: Master control ON command present

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Reaction: NONE

Acknowledge: NONE

Cause: The ON/OFF1 command is present (no 0 signal).

The command is either influenced via binector input p0840 (current CDS) or control word bit 0 via the master control.

Remedy: Switch the signal via binector input p0840 (current CDS) or control word bit 0 via the master control to 0.

F07220 (N, A) Drive: Master control by PLC missing

Message class: Communication error to the higher-level control system (9)

Reaction: OFF1 (NONE, OFF2, OFF3, STOP2)

Acknowledge: IMMEDIATELY

Cause: The "master control by PLC" signal was missing in operation.

- interconnection of the binector input for "master control by PLC" is incorrect (p0854).
- the higher-level control has withdrawn the "master control by PLC" signal.
- data transfer via the fieldbus (master/drive) was interrupted.

Remedy:
- check the interconnection of the binector input for "master control by PLC" (p0854).
- check the "master control by PLC" signal and, if required, switch in.
- check the data transfer via the fieldbus (master/drive).

Note:

If the drive should continue to operate after withdrawing "master control by PLC" then fault response must be parameterized to NONE or the message type should be parameterized as alarm.

F07300 (A) Drive: Line contactor feedback signal missing

Message class: Auxiliary unit faulted (20)
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: - the line contactor was not able to be closed within the time in p0861.
- the line contactor was not able to be opened within the time in p0861.
- the line contactor dropped out during operation
- the line contactor has closed although the drive converter is switched off.

Remedy: - 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)

F07311 Bypass motor switch

Message class: Application/technological function faulted (17)
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Fault value (r0949, interpret bitwise binary):
Bit 1: Switch "Closed" feedback signal missing.
Bit 2: Switch "Open" feedback signal missing.
Bit 3: Switch feedback signal too slow.
After switching, the system waits for the positive feedback signal. If the feedback signal is received later than the specified time, then a fault trip (shutdown) is issued.
Bit 6: Drive switch feedback signal not consistent with the bypass state.
The drive switch is closed when switching-on or when switching-in the motor.
See also: p1260 (Bypass configuration), r1261 (Bypass control/status word), p1266 (Bypass control command), p1267 (Bypass changeover source configuration), p1269 (Bypass switch feedback signal), p1274 (Bypass switch monitoring time)

Remedy: - check the transfer of the feedback signals.
- check the switch.

F07312 Bypass Line Side Switch:

Message class: Application/technological function faulted (17)
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Fault value (r0949, interpret bitwise binary):
Bit 1: Switch "Closed" feedback signal missing.
Bit 2: Switch "Open" feedback signal missing.
Bit 3: Switch feedback signal too slow.
After switching, the system waits for the positive feedback signal. If the feedback signal is received later than the specified time, then a fault trip (shutdown) is issued.
Bit 6: Line Side Switch feedback signal not consistent with the bypass state.
When switching-on or when switching-in the motor, the line side switch is closed without this having been requested from the bypass.
See also: p1260 (Bypass configuration), r1261 (Bypass control/status word), p1266 (Bypass control command), p1267 (Bypass changeover source configuration), p1269 (Bypass switch feedback signal), p1274 (Bypass switch monitoring time)

Remedy: - check the transfer of the feedback signals.
- check the switch.

F07320 Drive: Automatic restart interrupted

Message class: Application/technological function faulted (17)

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: - the specified number of restart attempts (p1211) has been completely used up because within the monitoring time (p1213) the faults were not able to be acknowledged. The number of restart attempts (p1211) is decremented at each new start attempt.

- the monitoring time for the power unit has expired (p0857).

- when exiting commissioning or at the end of the motor identification routine or the speed controller optimization, the drive unit is not automatically switched on 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.

- either increase or disable the monitoring time of the power unit (p0857).

- reduce the delay time to reset 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 switch-on command (BI: p0840).

- for p1210 = 26: by withdrawing the OFF2- / OFF3 command.

A07325 Drive: Hibernation mode active - drive automatically switched-on again

Message class: Application/technological function faulted (17)

Reaction: NONE

Acknowledge: NONE

Cause: The "hibernation" function is active (p2398). The drive automatically powers itself up again as soon as the restart conditions are present.

See also: p2398 (Hibernation mode operating type), r2399 (Hibernation mode status words)

Remedy: Not necessary.

The alarm is automatically withdrawn when the motor is restarted or when the motor is manually switched off.

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:

PMSM: operation with U/f characteristic and sensorless vector control.

Note:

PMSM: permanent-magnet synchronous motor

Remedy: Deactivate the "flying restart" function (p1200 = 0).

F07332 Flying restart: maximum speed reduced

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Reaction: OFF2 (NONE, OFF1)

Acknowledge: IMMEDIATELY

Cause: The maximum speed that can be reached is reduced; at very high speeds problems associated with the flying restart can be encountered.

Possible causes:

- power ratio, power unit/motor too high

Remedy: Parameter changes are not required.

Note:

A flying restart at speeds above 3000 rpm should be avoided.

A07352 Drive: Limit switch signals not plausible

Message class: Application/technological function faulted (17)

Reaction: NONE

Acknowledge: NONE

Cause: Limit switch signals are not plausible.

Possible causes:

- BICO interconnections are not OK (p3342, p3343).
- sensors are not supplying a valid signal (both supply a 0 signal).

Remedy:

- check the BICO interconnections for the limit switch signals.
- check the sensors.

See also: p3342 (Limit switch plus), p3343 (Limit switch minus)

A07353 Drive: DC quantity control deactivated

Message class: Motor overload (8)

Reaction: NONE

Acknowledge: NONE

Cause: The DC quantity control has deactivated itself.

The manipulated variable of the DC quantity control was at its limit.

Remedy: Optimize the DC quantity controller (Kp, Tn, bandwidth, PT2 filter).

Note:

After changing the corresponding parameters, the DC quantity control is re-enabled and the alarm is automatically withdrawn.

See also: p3857 (DC quantity controller P gain), p3858 (DC quantity controller integral time)

F07390 Drive: DC link capacitor forming fault

Message class: Motor overload (8)

Reaction: OFF2

Acknowledge: IMMEDIATELY

Cause: The "DC link capacitor forming" function was canceled with fault (r3382.3 = 1). The expected DC link voltage is out of tolerance.

See also: p3380 (Forming activation/duration), r3382 (Forming status word)

Remedy:

- check drive device (supply voltage, terminals, ...).
- set activation/duration again (p3380 > 0).
- restart forming (p0840 = 0/1 signal).

A07391 Drive: DC link capacitor forming active

Message class: Motor overload (8)

Reaction: NONE

Acknowledge: NONE

Cause: The "DC link capacitor forming" function is active. The remaining time of the operation is displayed in parameter r3381.

See also: p3380 (Forming activation/duration)

Remedy: Not necessary.

The alarm is automatically withdrawn after forming has been completed (r3382.2 = 1).

See also: r3382 (Forming status word)

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.

A07401 (N) Drive: DC link voltage maximum controller deactivated

Message class: Application/technological function faulted (17)

Reaction: NONE

Acknowledge: NONE

Cause: The Vdc_max controller can no longer maintain the DC link voltage (r0070) below the limit value (r1242, r1282) and was therefore switched out (disabled).

- the line supply voltage is permanently higher than specified for the power unit.
- the motor is permanently in the regenerative mode as a result of a load that is driving the motor.

Remedy:

- check whether the input voltage is within the permissible range (if required, increase the value in p0210).
- check whether the load duty cycle and load limits are within the permissible limits.

A07402 (N) Drive: DC link voltage minimum controller active

Message class: Application/technological function faulted (17)

Reaction: NONE

Acknowledge: NONE

Cause: The DC link voltage controller has been activated as the lower switch-in threshold has been undershot (r1246, r1286).

The kinetic energy of the motor is used to buffer the DC link. The drive is therefore braked.

See also: r0056 (Status word, closed-loop control), p1240 (Vdc controller configuration (vector control)), p1280 (Vdc controller configuration (U/f))

Remedy: The alarm disappears when power supply returns.

F07405 (N, A) Drive: Kinetic buffering minimum speed fallen below

Message class: Application/technological function faulted (17)

Reaction: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Acknowledge: IMMEDIATELY

Cause: During kinetic buffering the speed fell below minimum speed (p1257 or p1297 for vector drives with U/f control) and the line supply did not return.

Remedy: Check the speed threshold for the Vdc_min controller (kinetic buffering) (p1257, p1297).

See also: p1257 (Vdc_min controller speed threshold), p1297 (Vdc_min controller speed threshold (U/f))

F07406 (N, A) Drive: Kinetic buffering maximum time exceeded

Message class: Application/technological function faulted (17)

Reaction: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)

Acknowledge: IMMEDIATELY

Cause: The maximum buffer time (p1255 and p1295 for vector drives with U/f control) has been exceeded without the line supply having returned.

Remedy: Check the time threshold for Vdc-min controller (kinetic buffering) (p1255, p1295).

See also: p1255 (Vdc_min controller time threshold), p1295 (Vdc_min controller time threshold (U/f))

A07409 (N) Drive: U/f control, current limiting controller active

Message class: Application/technological function faulted (17)

Reaction: NONE

Acknowledge: NONE

Cause: The current limiting controller of the U/f control was activated because the current limit was exceeded.

Remedy: The alarm is automatically withdrawn 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 Uq_set_1 longer than 16 ms at its limit" is present and can be caused by the following:

- motor not connected or motor contactor open.
- motor data and motor configuration (star-delta) do not match.
- no DC link voltage present.
- power unit defective.
- the "flying restart" function is not activated.

Remedy:

- connect the motor or check the motor contactor.
- check the motor parameterization and the connection type (star-delta).
- check the DC link voltage (r0070).
- check the power unit.
- activate the "flying restart" function (p1200).

F07411 Drive: Flux 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 I2t limiting.
- power unit is too small.
- the magnetizing time is too short.

Remedy:

- correct the motor data. Perform motor data identification and rotating measurement.
- check the motor configuration.
- correct the current limits (p0640).
- reduce the induction motor load.
- if necessary, use a larger power unit.
- check motor supply cable.
- check power unit.
- increase p0346.

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 Rs identification after restart (p0621 = 2).
Remedy: For fault cause = 1:
- Shut down soft start (p1401.0 = 0).
- Shut down quick magnetizing (p1401.6 = 0).
For fault cause = 2:
- switch-on flux build-up control (p1401.2 = 1).
- Shut down quick magnetizing (p1401.6 = 0).
For 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).
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)

A07427 Motor switch-in alarm

Message class: Application/technological function faulted (17)
Reaction: NONE
Acknowledge: NONE
Cause: Alarm value (r2124, interpret decimal):
1:
The technology controller is not active or is not being used to control the main setpoint (see p2251).
2:
The operating time limits have been exceeded in at least one external motor.
Remedy: For alarm value = 1:
- enable technology controller (p2200).
- set technology controller mode p2251 = 0 (main setpoint).
For alarm value = 2:
- increase p2381, p2382 or set p2380 = 0.

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: For 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: - deactivate 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).

F07436 (A) Free tec_ctrl 0 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 free technology controller 0 has reached the limit.
The signal source for the actual value is set via connector input p11064.
Fault value (r0949, interpret decimal):
1: The actual value has reached the upper limit.
2: The actual value has reached the lower limit.
Remedy: - adapt the limit settings to the actual value signal (p11067, p11068).
- check the scaling of the actual value signal.
- check the signal source setting for the actual value (p11064).
See also: p11064 (Free tec_ctrl 0 actual value signal source), p11067 (Free tec_ctrl 0 actual value upper limit), p11068 (Free tec_ctrl 0 actual value lower limit)

F07437 (A) Free tec_ctrl 1 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 free technology controller 1 has reached the limit.
The signal source for the actual value is set via connector input p11164.
Fault value (r0949, interpret decimal):
1: The actual value has reached the upper limit.
2: The actual value has reached the lower limit.
Remedy: - adapt the limit settings to the actual value signal (p11167, p11168).
- check the scaling of the actual value signal.
- check the signal source setting for the actual value (p11164).
See also: p11164 (Free tec_ctrl 1 actual value signal source), p11167 (Free tec_ctrl 1 actual value upper limit), p11168 (Free tec_ctrl 1 actual value lower limit)

F07438 (A) Free tec_ctrl 2 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 free technology controller 2 has reached the limit.
The signal source for the actual value is set via connector input p11264.
Fault value (r0949, interpret decimal):
1: The actual value has reached the upper limit.
2: The actual value has reached the lower limit.
Remedy: - adapt the limit settings to the actual value signal (p11267, p11268).
- check the scaling of the actual value signal.
- check the signal source setting for the actual value (p11264).
See also: p11264 (Free tec_ctrl 2 actual value signal source), p11267 (Free tec_ctrl 2 actual value upper limit), p11268 (Free tec_ctrl 2 actual value lower limit)

A07444 PID autotuning is activated

Message class: Application/technological function faulted (17)
Reaction: NONE
Acknowledge: NONE
Cause: Automatic setting of the PID controller parameters (PID autotuning) was activated (p2350).
See also: p2350 (Enable PID autotuning)
Remedy: Not necessary.
This alarm is automatically withdrawn after the PID autotuning has been completed.

F07445 PID autotuning canceled

Message class: Application/technological function faulted (17)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The PID autotuning was canceled as a result of an error.
Remedy: - increase the offset.
- check system configuration.

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.

A07531 Drive: Command Data Set CDS not present

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: The selected command data set is not available (p0836 > p0170). The command data set was not changed over.
See also: p0810 (Command data set selection CDS bit 0), p0811 (Command data set selection CDS bit 1), r0836 (Command Data Set CDS selected)
Remedy: - select the existing command data set.
- set up additional command data sets.

F07800 Drive: No power unit present

Message class: Error in the parameterization / configuration / commissioning procedure (18)

Reaction: NONE

Acknowledge: IMMEDIATELY

Cause: 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 (switch-off/switch-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 switch-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.

F07806	**Drive: Regenerative power limit exceeded (F3E)**
Message class:	Power electronics faulted (5)
Reaction:	OFF2 (IASC/DCBRK)
Acknowledge:	IMMEDIATELY
Cause:	For blocksize power units, types PM250 and PM260, the regenerative rated power r0206[2] was exceeded for more than 10 s. See also: r0206 (Rated power unit power), p1531 (Power limit regenerative)
Remedy:	- increase the down ramp. - reduce the driving load. - use a power unit with a higher regenerative feedback capability. - for vector control, the regenerative power limit in p1531 can be reduced so that the fault is no longer triggered.

F07807	**Drive: Short-circuit/ground fault detected**
Message class:	Ground fault / inter-phase short-circuit detected (7)
Reaction:	OFF2 (NONE)
Acknowledge:	IMMEDIATELY
Cause:	A phase-phase short-circuit or ground fault was detected at the motor-side output terminals of the converter. Fault value (r0949, interpret decimal): 1: Short-circuit, phase UV. 2: Short-circuit, phase UW. 3: Short-circuit, phase VW. 4: Ground fault with overcurrent. 1yxxx: Ground fault with current in phase U detected (y = pulse number, xxxx = component of the current in phase V in per mille). 2yxxx: Ground fault with current in phase V detected (y = pulse number, 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. The ground fault test only functions when the motor is stationary. Connecting to a motor that is either not de-energized or partially de-energized is possibly detected as ground fault.
Remedy:	- check the motor-side converter connection for a phase-phase short-circuit. - rule-out interchanged line and motor cables. - check for a ground fault. For a ground fault the following applies: - do not enable the pulses when connecting to a rotating motor without the "Flying restart" function activated (p1200). - increase the de-energization time (p0347). - increase pulse suppression delay time (p1228) to ensure standstill. - if required, deactivate the monitoring (p1901).

F07810	**Drive: Power unit EEPROM without rated data**
Message class:	Hardware/software error (1)
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	No rated data are stored in the power unit EEPROM. See also: p0205, r0206, r0207, r0208, r0209
Remedy:	Replace the power unit or inform Siemens Customer Service.

A07850 (F)	**External alarm 1**
Message class:	External measured value / signal state outside the permissible range (16)
Reaction:	NONE
Acknowledge:	NONE
Cause:	The condition for "External alarm 1" is satisfied. Note: The "External alarm 1" is initiated by a 1/0 edge via binector input p2112. See also: p2112 (External alarm 1)
Remedy:	Eliminate the causes of this alarm.

A07851 (F)	**External alarm 2**
Message class:	External measured value / signal state outside the permissible range (16)
Reaction:	NONE
Acknowledge:	NONE
Cause:	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)
Remedy:	Eliminate the causes of this alarm.

A07852 (F)	**External alarm 3**
Message class:	External measured value / signal state outside the permissible range (16)
Reaction:	NONE
Acknowledge:	NONE
Cause:	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)
Remedy:	Eliminate the causes of this alarm.

F07860 (A)	**External fault 1**
Message class:	External measured value / signal state outside the permissible range (16)
Reaction:	OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	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)
Remedy:	- eliminate the causes of this fault. - acknowledge fault.

F07861 (A) External fault 2

Message class: External measured value / signal state outside the permissible range (16)
Reaction: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: 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)

Remedy:
- eliminate the causes of this fault.
- acknowledge fault.

F07862 (A) External fault 3

Message class: External measured value / signal state outside the permissible range (16)
Reaction: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The condition for "External fault 3" is satisfied.

Note:

The "External fault 3" is initiated by a 1/0 edge via the following parameters.
- AND logic operation, binector input p2108, p3111, p3112.
- switch-on delay p3110.

See also: p2108 (External fault 3), p3110 (External fault 3 switch-on delay), p3111 (External fault 3 enable), p3112 (External fault 3 enable negated)

Remedy:
- eliminate the causes of this fault.
- acknowledge fault.

A07891 Drive: Load monitoring pump/fan blocked

Message class: Motor overload (8)
Reaction: NONE
Acknowledge: NONE
Cause: The load monitoring is configured for a pump or fan (p2193 = 4, 5).

The monitoring function detects when the pump/fan is blocked.

It is possible that the blocking torque threshold (p2168) is set too low (e.g. heavy duty starting).

See also: p2165 (Load monitoring stall monitoring upper threshold), p2168 (Load monitoring stall monitoring torque threshold), p2181 (Load monitoring response), p2193 (Load monitoring configuration)

Remedy:
- check whether the pump/fan is blocked, and if blocked, then resolve the problem.
- check that the fan can freely move, and if necessary, resolve the problem.
- adapt the parameterization corresponding to the load (p2165, p2168)..

A07892 Drive: Load monitoring pump/fan no load condition

Message class: Application/technological function faulted (17)
Reaction: NONE
Acknowledge: NONE
Cause: The load monitoring is configured for a pump or fan (p2193 = 4, 5).

The monitoring function detects when the pump/fan is operating under no load conditions.

The pump is running in the dry state (no medium to be pumped) – or the fan has a broken belt.

It is possible that the detection torque threshold is too low (p2191).

See also: p2181 (Load monitoring response), p2191 (Load monitoring torque threshold no load), p2193 (Load monitoring configuration)

Remedy:
- for a pump, check the medium being pumped, and if required, provide the medium.
- for a fan, check the belt, and if required, replace.
- if necessary, increase the detection torque threshold (p2191).

A07893 Drive: Load monitoring pump leakage

Message class: Application/technological function faulted (17)

Reaction: NONE

Acknowledge: NONE

Cause: The load monitoring is configured for a pump (p2193 = 4).

The monitoring function detects a leak in the pump circuit.

In this case, the pump requires a torque that is lower than in normal operation to pump the reduced quantity.

See also: p2181, p2182, p2183, p2184, p2186, p2188, p2190, p2193

Remedy: - remove the leak in the pump circuit.

- for a nuisance trip, reduce the torque thresholds of the leakage characteristic (p2186, p2188, p2190).

F07894 Drive: Load monitoring pump/fan blocked

Message class: Motor overload (8)

Reaction: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: The load monitoring is configured for a pump or fan (p2193 = 4, 5).

The monitoring function detects when the pump/fan is blocked.

It is possible that the blocking torque threshold (p2168) is set too low (e.g. heavy duty starting).

See also: p2165 (Load monitoring stall monitoring upper threshold), p2168 (Load monitoring stall monitoring torque threshold), p2181 (Load monitoring response), p2193 (Load monitoring configuration)

Remedy: - check whether the pump/fan is blocked, and if blocked, then resolve the problem.

- check that the fan can freely move, and if necessary, resolve the problem.

- adapt the parameterization corresponding to the load (p2165, p2168)..

F07895 Drive: Load monitoring pump/fan no load condition

Message class: Application/technological function faulted (17)

Reaction: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: The load monitoring is configured for a pump or fan (p2193 = 4, 5).

The monitoring function detects when the pump/fan is operating under no load conditions.

The pump is running in the dry state (no medium to be pumped) – or the fan has a broken belt.

It is possible that the detection torque threshold is too low (p2191).

See also: p2181 (Load monitoring response), p2191 (Load monitoring torque threshold no load), p2193 (Load monitoring configuration)

Remedy: - for a pump, check the medium being pumped, and if required, provide the medium.

- for a fan, check the belt, and if required, replace.

- if necessary, increase the detection torque threshold (p2191).

F07896 Drive: Load monitoring pump leakage

Message class: Application/technological function faulted (17)

Reaction: OFF1 (NONE, OFF2, OFF3)

Acknowledge: IMMEDIATELY

Cause: The load monitoring is configured for a pump (p2193 = 4).

The monitoring function detects a leak in the pump circuit.

In this case, the pump requires a torque that is lower than in normal operation to pump the reduced quantity.

See also: p2181, p2182, p2183, p2184, p2186, p2188, p2190, p2193

Remedy: - remove the leak in the pump circuit.

- for a nuisance trip, reduce the torque thresholds of the leakage characteristic (p2186, p2188, p2190).

F07900 (N, A) Drive: Motor blocked

Message class: Application/technological function faulted (17)

Reaction: OFF2 (NONE, OFF1, OFF3, STOP2)

Acknowledge: IMMEDIATELY

Cause: Motor has been operating at the torque limit longer than the time specified in p2177 and below the speed threshold in p2175.

This signal can also be 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)

Remedy: - check that the motor can freely move.

- check the effective torque limit (r1538, r1539).
- check the parameter, message "Motor blocked" and if required, correct (p2175, p2177).
- check the direction of rotation enable signals for a flying restart of the motor (p1110, p1111).
- for U/f control: check the current limits and acceleration times (p0640, p1120).

F07901 Drive: Motor overspeed

Message class: Application/technological function faulted (17)

Reaction: OFF2 (IASC/DCBRK)

Acknowledge: IMMEDIATELY

Cause: The maximum permissible speed was either positively or negatively exceeded.

The maximum permissible positive speed is formed as follows: Minimum (p1082, CI: p1085) + p2162

The maximum permissible negative speed is formed as follows: Maximum (-p1082, CI: 1088) - p2162

Remedy: The following applies for a positive direction of rotation:

- check r1084 and if required, correct p1082, CI:p1085 and p2162.

The following applies for a negative direction of rotation:

- check r1087 and if required, correct p1082, CI:p1088 and p2162.

Activate precontrol of the speed limiting controller (p1401.7 = 1).

Increase the hysteresis for the overspeed signal p2162. This upper limit is dependent upon the maximum motor speed p0322 and the maximum speed p1082 of the setpoint channel.

F07902 (N, A) Drive: Motor stalled

Message class: Application/technological function faulted (17)

Reaction: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

Acknowledge: IMMEDIATELY

Cause: The system has identified that the motor has stalled for a time longer than is set in p2178.

Fault value (r0949, interpret decimal):

1: Reserved.

2: Stall detection using r1408.12 (p1745) or via (r0084 ... r0083).

See also: p2178 (Motor stalled delay time)

Remedy: Steps should always be taken to ensure that both motor data identification and the rotating measurement were carried out (see p1900, r3925).

- check whether the drive stalls solely due to the load in controlled mode or when the speed setpoint is still zero. If yes, then increase the current setpoint using p1610.
- if the motor excitation time (p0346) was significantly reduced and the drive stalls when it is switched on and run immediately, p0346 should be increased again.
- check whether a line phase failure is affecting power unit PM230, PM250, PM260.
- check whether the motor cables are disconnected (see A07929).

If there is no fault, then the fault tolerance (p1745) or the delay time (p2178) can be increased.

- check the current limits (p0640, r0067, r0289). If the current limits are too low, then the drive cannot be magnetized.
- 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.

A07903	**Drive: Motor speed deviation**
Message class:	Application/technological function faulted (17)
Reaction:	NONE
Acknowledge:	NONE
Cause:	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: - the load torque is greater than the torque setpoint. - when accelerating, the torque/current/power limit is reached. If the limits are not sufficient, then it is possible that the drive has been dimensioned too small. - for active Vdc controller. For U/f control, the overload condition is detected as the I_max controller is active. See also: p2149 (Monitoring configuration)
Remedy:	- increase p2163 and/or p2166. - increase the torque/current/power limits. - deactivate alarm with p2149.0 = 0.

A07910 (N)	**Drive: Motor overtemperature**
Message class:	Motor overload (8)
Reaction:	NONE
Acknowledge:	NONE
Cause:	KTY84/PT1000 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/sensor alarm threshold), p0610 (Motor overtemperature response)
Remedy:	- check the motor load. - check the motor ambient temperature. - check KTY84/PT1000. - check overtemperatures of the motor temperature model 2 (p0626 ... p0628). 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)

A07920	**Drive: Torque/speed too low**
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 low). For p2193 = 2: The speed signal from the external encoder (refer to p3230) deviates from the speed (r2169) (too low). See also: p2181 (Load monitoring response)
Remedy:	- check the connection between the motor and load. - adapt the parameterization corresponding to the load.

A07921 Drive: Torque/speed too high

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.

A07926	**Drive: Envelope curve parameter invalid**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	NONE
Cause:	Invalid parameter values were entered for the envelope characteristic of the load monitoring. The following rules apply for the speed thresholds: p2182 < p2183 < p2184 The following rules apply for the torque thresholds: p2185 > p2186 p2187 > p2188 p2189 > p2190 Load monitoring configuration and response must match. It is not permissible that the individual load torque monitoring areas overlap. Alarm value (r2124, interpret decimal): Number of the parameter with the invalid value. The load torque monitoring has not been activated as long as the alarm is active.
Remedy:	- set the parameters for the load monitoring according to the applicable rules. - if necessary, deactivate the load monitoring (p2181 = 0, p2193 = 0).

A07927	**DC braking active**
Message class:	Application/technological function faulted (17)
Reaction:	NONE
Acknowledge:	NONE
Cause:	The motor is braked with DC current. DC braking is active. 1) A message with response DCBRK is active. The motor is braked with the braking current set in p1232 for the duration set in in p1233. If the standstill threshold p1226 is undershot, then braking is prematurely canceled. 2) DC braking has been activated at binector input p1230 with the DC braking set (p1230 = 4). Braking current p1232 is injected until this binector input becomes inactive.
Remedy:	Not necessary. The alarm automatically disappears once DC braking has been executed.

A07929 (F)	**Drive: No motor detected**
Message class:	Application/technological function faulted (17)
Reaction:	NONE
Acknowledge:	NONE
Cause:	The absolute current value is so small after enabling the inverter pulses that no motor is detected. Note: - in the case of vector control and an induction motor, this alarm is followed by fault F07902. - PM330: Correction currents are calculated and displayed in the optimized pulse pattern range. See also: p2179 (Output load identification current limit)
Remedy:	- check the motor feeder cables. - reduce the threshold value (p2179), e.g. for synchronous motors. - increase threshold value (PM330). - check the voltage boost of the U/f control (p1310). - carry out a standstill measurement to set the stator resistance (p0350).

F07936	**Drive: load failure**
Message class:	Application/technological function faulted (17)
Reaction:	OFF1 (NONE, OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	The load monitoring has detected a load failure.
Remedy:	- check the sensor. - if necessary, deactivate the load monitoring (p2193). See also: p2193 (Load monitoring configuration), p3232 (Load monitoring failure detection)

F07950 (A)	**Motor parameter incorrect**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	The motor parameters were incorrectly entered while commissioning (e.g. p0300 = 0, no motor) Fault value (r0949, interpret decimal): Parameter number involved. See also: p0300, p0301, p0304, p0305, p0307, p0310, p0311, p0314, p0316, p0320, p0322, p0323
Remedy:	Compare the motor data with the rating plate data and if required, correct.

F07967	**Drive: Incorrect pole position identification**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	OFF2 (NONE, OFF1)
Acknowledge:	IMMEDIATELY
Cause:	A fault has occurred during the pole position identification routine. Only for internal Siemens troubleshooting.
Remedy:	Carry out a POWER ON.

F07968	**Drive: Lq-Ld measurement incorrect**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	A fault has occurred during the Lq-Ld measurement. Fault value (r0949, interpret decimal): 10: Stage 1: The ratio between the measured current and zero current is too low. 12: Stage 1: The maximum current was exceeded. 15: Second harmonic too low. 16: Drive converter too small for the measuring technique. 17: Abort due to pulse inhibit.
Remedy:	For fault value = 10: Check whether the motor is correctly connected. Replace the power unit involved. Deactivate technique (p1909). For fault value = 12: Check whether motor data have been correctly entered. Deactivate technique (p1909). For fault value = 16: Deactivate technique (p1909). For fault value = 17: Repeat technique.

F07969	**Drive: Incorrect pole position identification**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	A fault has occurred during the pole position identification routine. Fault value (r0949, interpret decimal): 1: Current controller limited 2: Motor shaft locked. 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.
Remedy:	For fault value = 1: Check whether the motor is correctly connected. Check whether motor data have been correctly entered. Replace the power unit involved. For fault value = 2: 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, 10). For fault value = 16: Change the technique (p1980). For fault value = 17: Repeat technique. For fault value = 18: Increase the value for p0329. Saturation not sufficient, change the technique (p1980 = 10). For fault value = 20: Before carrying out a pole position identification routine ensure that the motor shaft is absolutely stationary (zero speed).

A07980	**Drive: Rotating measurement activated**
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	NONE
Cause:	The rotating measurement (automatic speed controller optimization) is activated. The rotating measurement is carried out at the next switch-on command. Note: During the rotating measurement it is not possible to save the parameters (p0971). See also: p1960 (Rotating measurement selection)
Remedy:	Not necessary. The alarm disappears automatically after the speed controller optimization has been successfully completed or for the setting p1900 = 0.

A07981	**Drive: Enable signals for the rotating measurement missing**
Message 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 signal)

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. For fault value = 1 ... 2: - increase the measuring speed (p1961) and repeat the measurement. For 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).
For fault value = 9, 10:
- the measurement was carried out at an operating point where the load torque is too high. Select a more suitable operating point, either by changing the speed setpoint (p1961) or by reducing the load torque. The load torque may not be varied while making measurements.
Note:
The saturation characteristic identification routine can be disabled using p1959.1.
See also: p1959 (Rotating measurement configuration)

F07984 Drive: Speed controller optimization, moment of inertia

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause: A fault has occurred while identifying the moment of inertia.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The speed setpoint was not able to be approached as the minimum limiting is active.
3. The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
4. The speed setpoint was not able to be approached as the maximum limiting is active.
5: It is not possible to increase the speed by 10% as the minimum limiting is active.
6: It is not possible to increase the speed by 10% as the suppression (skip) bandwidth is active.
7: It is not possible to increase the speed by 10% as the maximum limiting is active.
8: The torque difference after the speed setpoint step is too low in order to be able to still reliably identify the moment of inertia.
9: Too few data to be able to reliably identify the moment of inertia.
10: After the setpoint step, the speed either changed too little or in the incorrect direction.
11: The identified moment of inertia is not plausible. The measured moment of inertia is less than the 0.1x or greater than 500x the preset moment of inertia of the motor p0341.
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, 5:
- adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).
For fault value = 3, 6:
- adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).
For 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.
For fault value = 11:
- reduce the moment of inertia of the motor p0341 (e.g. factor of 0.2) or increase (e.g. factor of 5) and repeat the measurement.

Note:
The moment of inertia identification routine can be disabled using p1959.2.
See also: p1959 (Rotating measurement configuration)

F07985 Drive: Speed controller optimization (oscillation test)

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause: A fault has occurred during the vibration test.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The speed setpoint was not able to be approached as the minimum limiting is active.
3: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
4: The speed setpoint was not able to be approached as the maximum limiting is active.
5: Torque limits too low for a torque step.
6: No suitable speed controller setting was found.
Remedy: For fault value = 1:
- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- carry out a motor data identification routine (p1910).
- if required, reduce the dynamic factor (p1967 < 25 %).
For fault value = 2:
- adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).
For fault value = 3:
- adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).
For fault value = 4:
- adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).
For fault value = 5:
- increase the torque limits (e.g. p1520, p1521).
For fault value = 6:
- reduce the dynamic factor (p1967).
- disable the vibration test (p1959.4 = 0) and repeat the rotating measurement.
See also: p1959 (Rotating measurement configuration)

F07986 Drive: Rotating measurement ramp-function generator

Message 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.

60: Incorrect power stack data for the calibration of the converter output voltage

61: Incorrect measured values for the calibration of the converter output voltage

Note:

Percentage values are referred to the rated motor impedance:

Zn = Vmot.nom / sqrt(3) / Imot,nom

Remedy: For 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).

For fault value = 4, 7:

- check whether the inductance in p0233 is correctly set.
- check whether motor has been correctly connected (star-delta).

For 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 switch-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 deactivated, 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 or application class "Standard Drive Control, STC" (p0096 = 1) 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 the 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) or set p0096 = 0 (only G120). - switch over to a drive data set, in which the conditions do not apply.

F08010 (N, A)	CU: Analog-to-digital converter
Message class:	Hardware/software error (1)
Reaction:	OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowledge:	IMMEDIATELY (POWER ON)
Cause:	The analog-to-digital converter on the Control Unit has not supplied any converted data.
Remedy:	- check the power supply. - replace Control Unit.

F08501 (N, A)	PROFINET: Setpoint timeout
Message class:	Communication error to the higher-level control system (9)
Reaction:	OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Acknowledge:	IMMEDIATELY
Cause:	The reception of setpoints from PROFINET has been interrupted. - bus connection interrupted. - controller switched off. - controller set into the STOP state.
Remedy:	- Restore the bus connection and set the controller to RUN. - if the error is repeated, check the update time set in the bus configuration (HW Config).

F08502 (A)	PROFINET: Monitoring time sign-of-life expired
Message class:	Communication error to the higher-level control system (9)
Reaction:	OFF1 (OFF2, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	The monitoring time for the sign-of-life counter has expired. The connection to the PROFINET interface was interrupted.
Remedy:	- carry out a POWER ON (switch-off/switch-on). - contact Technical Support.

A08511 (F)	PROFINET: Receive configuration data invalid
Message class:	Error in the parameterization / configuration / commissioning procedure (18)
Reaction:	NONE
Acknowledge:	NONE
Cause:	The drive unit did not accept the receive configuration data. Alarm value (r2124, interpret decimal): Return value of the receive configuration data check. 2: Too many PZD data words for 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.

Remedy: Check the receive configuration data.
For alarm value = 2:
- check the number of data words for output and input.

A08526 (F) PROFINET: No cyclic connection

Message class: Communication error to the higher-level control system (9)
Reaction: NONE
Acknowledge: NONE
Cause: There is no connection to a PROFINET controller.
Remedy: Establish the cyclic connection and activate the controller with cyclic operation.
Check the parameters "Name of Station" and "IP of Station" (r61000, r61001).

A08564 PN/COMM BOARD: syntax error in the configuration file

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: A syntax error has been detected in the ASCII configuration file for the Communication Board Ethernet. The saved configuration file has not been loaded.
Remedy: - correct the PROFINET interface configuration (p8920 and following) and activate (p8925 = 2).
- reinitialize the station (e.g. using the STARTER commissioning software)
Note:
The configuration is not applied until the next POWER ON!
See also: p8925 (Activate PN interface configuration)

A08565 PROFINET: Consistency error affecting adjustable parameters

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: A consistency error was detected when activating the configuration (p8925) for the PROFINET interface. The currently set configuration has not been activated.
Alarm value (r2124, interpret decimal):
0: general consistency error
1: error in the IP configuration (IP address, subnet mask or standard gateway)
2: Error in the station names.
3: DHCP was not able to be activated, as a cyclic PROFINET connection already exists.
4: a cyclic PROFINET connection is not possible as DHCP is activated.
See also: p8920 (PN Name of Station), p8921 (PN IP address), p8922 (PN Default Gateway), p8923 (PN Subnet Mask)
Remedy: - check the required interface configuration (p8920 and following), correct if necessary, and activate (p8925).
or
- reconfigure the station via the "Edit Ethernet node" screen form (e.g. with STARTER commissioning software).
See also: p8925 (Activate PN interface configuration)

F08700 (A) CAN: Communications error

Message class: Communication error to the higher-level control system (9)
Reaction: OFF3 (NONE, OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: A CAN communications error has occurred.
Fault value (r0949, interpret decimal):
1: The error counter for the send telegrams has exceeded the BUS OFF value 255. The bus disables the CAN controller.
- bus cable short circuit.
- incorrect baud rate.
- incorrect bit timing.

2: The master no longer interrogated the CAN node status longer than for its "life time". The "life time" is obtained from the "guard time" (p8604[0]) multiplied by the "life time factor" (p8604[1]).
- bus cable interrupted.
- bus cable not connected.
- incorrect baud rate.
- incorrect bit timing.
- master fault.
Note:
The fault response can be set as required using p8641.
See also: p8604 (CAN life guarding), p8641 (CAN Abort Connection Option Code)

Remedy: - check the bus cable
- check the baud rate (p8622).
- check the bit timing (p8623).
- check the master.
The CAN controller must be manually restarted with p8608 = 1 after the cause of the fault has been resolved!
See also: p8608 (CAN Clear Bus Off Error), p8622 (CAN bit rate), p8623 (CAN Bit Timing selection)

F08701 CAN: NMT state change

Message class: Communication error to the higher-level control system (9)
Reaction: OFF3
Acknowledge: IMMEDIATELY
Cause: A CANopen NMT state transition from "operational" to "pre-operational" or after "stopped".
Fault value (r0949, interpret decimal):
1: CANopen NMT state transition from "operational" to "pre-operational".
2: CANopen NMT state transition from "operational" to "stopped".
Note:
In the NMT state "pre-operational", process data cannot be transferred and in the NMT state "stopped", no process data and no service data can be transferred.
Remedy: Not necessary.
Acknowledge the fault and continue operation.

F08702 (A) CAN: RPDO Timeout

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.
See also: p8699 (CAN: RPDO monitoring time)
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).

See also: p8622 (CAN bit rate), p8623 (CAN Bit Timing selection)

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).

For alarm value = 2:
- reduce the cycle times of the SDO receive messages.
- SDO request from master only after SDO feedback for previous SDO request.

See also: p8622 (CAN bit rate), p8623 (CAN Bit Timing selection)

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.

A08755 CAN: Object cannot be mapped

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: The CANopen object is not provided for the Process Data Object (PDO) Mapping.
Remedy: Use a CANopen object intended for the PDO mapping or enter 0.
The following objects can be mapped in the Receive Process Data Object (RPDO) or Transmit Process Data Object (TPDO):
- RPDO: 6040 hex, 6060 hex, 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.

A08756 CAN: Number of mapped bytes exceeded

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: The number of bytes of the mapped objects exceeds the telegram size for net data. A max. of 8 bytes is permissible.
Remedy: Map fewer objects or objects with a smaller data type.
See also: p8710, p8711, p8712, p8713, p8714, p8715, p8716, p8717, p8730, p8731, p8732, p8733, p8734, p8735, p8736, p8737

A08757 CAN: Set COB-ID invalid

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: For online operation, the appropriate COB-ID must be set invalid before mapping.
Example:
Mapping for RPDO 1 should be changed (p8710[0]).
--> set p8700[0] = C00006E0 hex (invalid COB-ID)
--> set p8710[0] as required.
--> p8700[0] enter a valid COB-ID
Remedy: Set the COB-ID to invalid.

A08759 CAN: PDO COB-ID already available

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: An existing PDO COB-ID was allocated.
Remedy: Select another PDO COB-ID.

A08760 CAN: maximum size of the IF PZD exceeded

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: NONE
Acknowledge: NONE
Cause: 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
Remedy: Map fewer process data in PDO.
Apply one of the following options to delete the alarm:
- POWER ON (switch-off/switch-on).
- carry out a warm restart (p0009 = 30, p0976 = 2).
- execute CANopen NMT command reset node.
- change CANopen NMT state.
- delete alarm buffer [0...7] (p2111 = 0).

A08800 PROFIenergy energy-saving mode active

Message class: Communication error to the higher-level control system (9)
Reaction: NONE
Acknowledge: NONE
Cause: The PROFIenergy energy-saving mode is active
Alarm value (r2124, interpret decimal):
Mode ID of the active PROFIenergy energy-saving mode.
See also: r5600 (Pe energy-saving mode ID)

Remedy: The alarm is automatically withdrawn when the energy-saving mode is exited.
Note:
The energy-saving mode is exited after the following events:
- the PROFIenergy command end_pause is received from the higher-level control.
- the higher-level control has changed into the STOP operating state.
- the PROFINET connection to the higher-level control has been disconnected.

F13009 Licensing OA application not licensed

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: At least one OA application which is under license does not have a license.
Note:
Refer to r4955 and p4955 for information about the installed OA applications.
Remedy: - enter and activate the license key for OA applications under license (p9920, p9921).
- if necessary, deactivate unlicensed OA applications (p4956).

F13100 Know-how protection: Copy protection error

Message class: Error in the parameterization / configuration / commissioning procedure (18)
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: The know-how protection with copy protection for the memory card is active.
An error has occurred when checking the memory card.
Fault value (r0949, interpret decimal):
0: A memory card is not inserted.
1: An invalid memory card is inserted (not SIEMENS).
2: An invalid memory card is inserted.
3: The memory card is being used in another Control Unit.
12: An invalid memory card is inserted (OEM input incorrect, p7769).
13: The memory card is being used in another Control Unit (OEM input incorrect, p7759).
See also: p7765 (KHP configuration)
Remedy: For fault value = 0, 1:
- insert the correct memory card and carry out POWER ON.
For fault value = 2, 3, 12, 13:
- contact the responsible OEM.
- Deactivate copy protection (p7765) and acknowledge the fault (p3981).
- Deactivate know-how protection (p7766 ... p7768) and acknowledge the fault (p3981).
Note:
In general, the copy protection can only be changed when know-how protection is deactivated.
KHP: Know-How Protection
See also: p3981 (Acknowledge drive object faults), 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 switch-on due to the missing line reactor.
- power cables are not correctly connected.
- power cables exceed the maximum permissible length.
- power unit defective.
- line phase interrupted.

Fault value (r0949, interpret bitwise binary):

Bit 0: Phase U.

Bit 1: Phase V.

Bit 2: Phase W.

Bit 3: Overcurrent in the DC link.

Note:

Fault value = 0 means that the phase with overcurrent is not recognized.

Remedy:

- check the motor data - if required, carry out commissioning.
- check the motor circuit configuration (star/delta).
- U/f operation: Increase up ramp.
- U/f operation: Check assignment of rated currents of motor and power unit.
- check the line supply quality.
- reduce motor load.
- correct connection of line reactor.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.
- replace power unit.
- check the line supply phases.

F30002	**Power unit: DC link voltage overvoltage**
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 and DC link voltage. set p0210 as low as possible (also see A07401, p1294 = 0). - 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, interpret decimal): 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 the 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 asymmetrical.
- 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.
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 off

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 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)

F30022 Power unit: Monitoring U_ce

Message class: Ground fault / inter-phase short-circuit detected (7)
Reaction: OFF2
Acknowledge: POWER ON
Cause: In the power unit, the monitoring of the collector-emitter voltage (U_ce) of the semiconductor has responded.
Possible causes:
- fiber-optic cable interrupted.
- power supply of the IGBT gating module missing.
- short-circuit at the power unit output.
- defective semiconductor in the power unit.

Fault value (r0949, interpret binary):
Bit 0: Short-circuit in phase U
Bit 1: Short circuit in phase V
Bit 2: Short-circuit in phase W
Bit 3: Light transmitter enable defective
Bit 4: U_ce group fault signal interrupted

See also: r0949 (Fault value)

Remedy: - check the fiber-optic cable and if required, replace.
- check the power supply of the IGBT gating module (24 V).
- check the power cable connections.
- select the defective semiconductor and replace.

F30024 Power unit: Overtemperature thermal model

Message class: Power electronics faulted (5)
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The temperature difference between the heat sink and chip has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.
See also: r0037 (Power unit temperatures)
Remedy: - adapt the load duty cycle.
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.
- if DC braking is active: reduce braking current (p1232).

F30025 Power unit: Chip overtemperature

Message class: Power electronics faulted (5)
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The chip temperature of the semiconductor has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.
Fault value (r0949, interpret decimal):
Temperature difference between the heat sink and chip [0.01 °C].
Remedy: - adapt the load duty cycle.
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.
Notice:
This fault can only be acknowledged after the 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 precharged 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 precharging resistors are overheated as there were too many precharging operations per time unit.
6) The precharging 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) Precharging circuit may be defective.
Fault value (r0949, interpret binary):
yyyyxxxx hex:
yyyy = power unit state
0: Fault status (wait for OFF and fault acknowledgment).
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 precharging.
8: Precharging started, DC link voltage less than the minimum switch-on voltage.
9: Precharging, DC link voltage end of precharging still not detected.
10: Wait for the end of the de-bounce time of the main contactor after precharging has been completed.
11: Precharging 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 precharging, ready for pulse enable.
Bit 9: Reserved.
Bit 10: Overcurrent detected.
Bit 11: Reserved.
Bit 12: Reserved.
Bit 13: Vce fault detected, transistor de-saturated due to overcurrent/short-circuit.
Bit 14: Undervoltage detected.
See also: p0210 (Drive unit line supply voltage)

Remedy: In general:
- check the line supply voltage at the input terminals.
- check the line supply voltage setting (p0210).
- wait until the precharging resistors have cooled down. For this purpose, preferably disconnect the infeed unit from the line supply.
For 5):
- carefully observe the permissible precharging frequency (refer to the appropriate Equipment Manual).
For 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).
For 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.

A30032 Power unit: Hardware current limiting in phase V

Message class: Power electronics faulted (5)
Reaction: NONE
Acknowledge: NONE
Cause: Hardware current limit for phase V responded. The pulsing in this phase is inhibited for one pulse period.
- closed-loop control is incorrectly parameterized.
- fault in the motor or in the power cables.
- the power cables exceed the maximum permissible length.
- motor load too high
- power unit defective.

Note:
Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.

Remedy: Check the motor data and if required, recalculate the control parameters (p0340 = 3). As an alternative, run a motor data identification (p1910 = 1, p1960 = 1).
- check the motor circuit configuration (star/delta).
- check the motor load.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.

A30033 Power unit: Hardware current limiting in phase W

Message class: Power electronics faulted (5)
Reaction: NONE
Acknowledge: NONE
Cause: Hardware current limit for phase W responded. The pulsing in this phase is inhibited for one pulse period.
- closed-loop control is incorrectly parameterized.
- fault in the motor or in the power cables.
- the power cables exceed the maximum permissible length.
- motor load too high
- power unit defective.
Note:
Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.
Remedy: - check the motor data and if required, recalculate the control parameters (p0340 = 3). As an alternative, run a motor data identification (p1910 = 1, p1960 = 1).
- check the motor circuit configuration (star/delta).
- check the motor load.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.

A30034 Power unit: Internal overtemperature

Message class: Power electronics faulted (5)
Reaction: NONE
Acknowledge: NONE
Cause: The alarm threshold for internal overtemperature has been reached.
If the temperature inside the unit continues to increase, fault F30036 may be triggered.
- ambient temperature might be too high.
- insufficient cooling, fan failure.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - check the ambient temperature.
- check the fan for the inside of the unit.

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 the 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 the alarm threshold for alarm A05004 has been undershot.

A30042 Power unit: Fan has reached the maximum operating hours

Message class: Power electronics faulted (5)
Reaction: NONE
Acknowledge: NONE
Cause: The maximum operating time of at least one fan will soon be reached, or has already been exceeded.
Alarm value (r2124, interpret binary):
Bit 0: heat sink fan will reach the maximum operating time in 500 hours.
Bit 1: heat sink fan has exceeded the maximum operating time.
Bit 8: internal device fan will reach the maximum operating time in 500 hours.
Bit 9: internal device fan has exceeded the maximum operating time.
Note:
The maximum operating time of the heat sink fan in the power unit is displayed in p0252.
The maximum operating time of the internal device fan in the power unit is internally specified and is fixed.

Remedy: For the fan involved, carry out the following:
- replace the fan.
- reset the operating hours counter (p0251, p0254).

See also: p0251 (Operating hours counter power unit fan), p0252 (Maximum operating time power unit fan), p0254 (Operating hours counter power unit fan inside the converter)

A30049 Power unit: Internal fan faulty

Message class: Auxiliary unit faulted (20)
Reaction: NONE
Acknowledge: NONE
Cause: The internal fan has failed.
Remedy: Check the internal fan and replace if necessary.

F30051 Power unit: Motor holding brake short circuit detected

Message class: External measured value / signal state outside the permissible range (16)
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A short-circuit at the motor holding brake terminals has been detected.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

F30052 EEPROM data error

Message class: Hardware/software error (1)
Reaction: OFF2
Acknowledge: POWER ON
Cause: EEPROM data error of the power unit module.
Fault value (r0949, interpret decimal):
0, 2, 3, 4:
The EEPROM data read in from the power unit module is inconsistent.
1:
EEPROM data is not compatible to the firmware of the Control Unit.
Remedy: Replace power unit module.

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 is not supplying any plausible values

Alarm value (r2124, interpret bitwise binary):

Bit 1: Phase U.

Bit 2: Phase V.

Bit 3: Phase W.

Remedy: - Deactivate voltage measurement (p0247.0 = 0).

- Deactivate flying restart with voltage measurement (p0247.5 = 0) and deactivate fast flying restart (p1780.11 = 0).

F30068 Power unit: undertemperature inverter heat sink

Message class: Power electronics faulted (5)
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The actual inverter heat sink temperature is below the permissible minimum value.

Possible causes:

- the power unit is being operated at an ambient temperature that lies below the permissible range.
- the temperature sensor evaluation is defective.

Fault value (r0949, interpret decimal): inverter heat sink temperature [0.1 °C].

Remedy: - ensure that higher ambient temperatures prevail.

- replace the power unit.

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.

F30072 Setpoints can no longer be transferred to the Power Module

Message class: Internal (DRIVE-CLiQ) communication error (12)
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: More than one setpoint telegram was not able to be transferred to the power unit module.
Remedy: Check the interface (adjustment and locking) to the power unit module.

F30074 (A) Communication error between the Control Unit and Power Module

Message class: Internal (DRIVE-CLiQ) communication error (12)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Communications between the Control Unit (CU) and Power Module (PM) via the interface no longer possible. The CU may have been withdrawn or is incorrectly inserted.

Fault value (r0949, interpret hexadecimal):

0 hex:

- a Control Unit with external 24 V supply was withdrawn from the Power Module during operation.
- with the Power Module switched off, the external 24 V supply for the Control Unit was interrupted for some time.

	1 hex:
	The Control Unit was withdrawn from the Power Module during operation, although the encoderless safe motion monitoring functions are enabled. This is not supported. After re-inserting the Control Unit in operation, communications to the Power Module no longer possible.
	20A hex:
	The Control Unit was inserted on a Power Module, which has another code number.
	20B hex:
	The Control Unit was inserted on a Power Module, which although it has the same code number, has a different serial number. The Control Unit executes an automatic warm restart to accept the new calibration data.
Remedy:	For fault value = 0 and 20A hex:
	Insert the Control Unit on an appropriate Power Module and continue operation. If required, carry out a POWER ON of the Control Unit.
	For fault value = 1 hex:
	Carry out a POWER ON of the Control Unit.

F30075 Configuration of the power unit unsuccessful

Message class:	Internal (DRIVE-CLiQ) communication error (12)
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	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.
Remedy:	- acknowledge the fault and continue operation.
	- if the fault reoccurs, carry out a POWER ON (switch-off/switch-on).
	- if required, replace the power unit.

F30080 Power unit: Current increasing too quickly

Message class:	Power electronics faulted (5)
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	The power unit has detected an excessive rate of rise in the overvoltage range.
	- closed-loop control is incorrectly parameterized.
	- motor has a short-circuit or fault to ground (frame).
	- U/f operation: 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.

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)

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 (switch-off/switch-on). - upgrade firmware to later version. - contact Technical Support.

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 (switch-off/switch-on). - upgrade firmware to later version. - contact Technical Support.

N30800 (F)	**Power unit: Group signal**
Message class:	Power electronics faulted (5)
Reaction:	OFF2
Acknowledge:	NONE
Cause:	The power unit has detected at least one fault.
Remedy:	Evaluate the other messages that are presently available.

F30802	**Power unit: Time slice overflow**
Message class:	Hardware/software error (1)
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	A time slice overflow has occurred. Fault value (r0949, interpret decimal): xx: Time slice number xx
Remedy:	- carry out a POWER ON (switch-off/switch-on) for all components. - upgrade firmware to later version. - contact Technical Support.

F30804 (N, A)	**Power unit: CRC**
Message class:	Hardware/software error (1)
Reaction:	OFF2 (OFF1, OFF3)
Acknowledge:	IMMEDIATELY
Cause:	A checksum error (CRC error) has occurred for the power unit.
Remedy:	- carry out a POWER ON (switch-off/switch-on) for all components. - upgrade firmware to later version. - contact Technical Support.

F30805	**Power unit: EEPROM checksum error**
Message class:	Hardware/software error (1)
Reaction:	OFF2
Acknowledge:	IMMEDIATELY
Cause:	Internal parameter data is corrupted. Fault value (r0949, interpret hexadecimal): 01: EEPROM access error. 02: Too many blocks in the EEPROM.
Remedy:	Replace the module.

F30809 Power unit: Switching information not valid

Message 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 (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

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 (switch-off/switch-on) for all components.
- upgrade firmware to later version.
- contact Technical Support.

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 Technical Support.

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 an analog/digital converter.
Fault value (r0949, interpret hexadecimal):
80000000 hex:
- internal software error.
00000001 hex ... 0000FFFF hex:
- module fault.
Remedy: For fault value = 80000000 hex:
- upgrade firmware to later version.
For 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, PT1000: R > 2120 Ohm
2: Measured resistance too low.
PTC: R < 20 Ohm, KTY: R < 50 Ohm, PT1000: R < 603 Ohm

Remedy: - make sure that the sensor is connected correctly.
- replace the sensor.

F30950 Power unit: Internal software error

Message class: Hardware/software error (1)
Reaction: OFF2
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - if necessary, upgrade the firmware in the power unit to a later version.
- contact Technical Support.

A30999 (F, N) Power unit: Unknown alarm

Message class: Power electronics faulted (5)
Reaction: NONE
Acknowledge: NONE
Cause: An alarm occurred on the power unit that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.
Remedy: - replace the firmware on the power unit by an older firmware version (r0128).
- upgrade the firmware on the Control Unit (r0018).

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 Technical Support.

A50010 (F) PROFINET: Consistency error affecting adjustable parameters

Message class: Communication error to the higher-level control system (9)
Reaction: NONE
Acknowledge: NONE
Cause: A consistency error was detected when activating the configuration (p8925) for the PROFINET interface. The currently set configuration has not been activated.
Alarm value (r2124, interpret decimal):
0: general consistency error
1: error in the IP configuration (IP address, subnet mask or standard gateway).
2: Error in the station names.
3: DHCP was not able to be activated, as a cyclic PROFINET connection already exists.
4: a cyclic PROFINET connection is not possible as DHCP is activated.
Note:
DHCP: Dynamic Host Configuration Protocol
See also: p8920 (PN Name of Station), p8921 (PN IP address), p8922 (PN Default Gateway), p8923 (PN Subnet Mask), p8924 (PN DHCP Mode)

Remedy: - check the required interface configuration (p8920 and following), correct if necessary, and activate (p8925).
or
- reconfigure the station via the "Edit Ethernet node" screen form (e.g. with STARTER commissioning software).
See also: p8925 (Activate PN interface configuration)

A50011 (F) Ethernet/IP: configuration error

Message class: Communication error to the higher-level control system (9)
Reaction: NONE
Acknowledge: NONE
Cause: An EtherNet/IP controller attempts to establish a connection using an incorrect configuring telegram.
The telegram length set in the controller does not match the parameterization in the drive device.
Remedy: Check the set telegram length.
For p0922 not equal to 999, then the length of the selected telegram applies.
For p0922 = 999, the maximum interconnected PZD (r2067) applies.
See also: p0922 (PROFIdrive PZD telegram selection), r2067 (PZD maximum interconnected)

F50510 FBLOCKS: Logon of the run-time group rejected

Message class: General drive fault (19)
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: When the run-time groups of the free function blocks attempted to log on with the sampling time management, the logon of at least one run-time group was rejected.
Too many different hardware sampling times may have been assigned to the free function blocks.
Remedy: - check number of available hardware sampling times (T_sample < 8 ms) (r7903).

F50511 FBLOCKS: Memory no longer available for free function blocks

Message class: General drive fault (19)
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: When the free function blocks were activated, more memory was requested than was available on the Control Unit.
Remedy: Not necessary.

A50513 (F) FBLOCKS: Run sequence value already assigned

Message class: General drive fault (19)
Reaction: NONE
Acknowledge: NONE
Cause: An attempt was made to assign a run sequence value already assigned to a function block on this drive object to another additional function block on the same drive object. A run sequence value can only be precisely assigned to one function block on one drive object.
Remedy: Set another value that is still available on this drive object for the run sequence.

A50517 FBLOCKS: Int. meas. active

Message class: General drive fault (19)
Reaction: NONE
Acknowledge: NONE
Cause: A Siemens internal measurement has been activated.
Remedy: Carry out a POWER ON (switch-off/switch-on) for the Control Unit involved.

F50518 FBLOCKS: Sampling time of free run-time group differs at download

Message class: General drive fault (19)
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: In the STARTER/SCOUT project that was downloaded, the hardware sampling time of a free run-time group (1 <= p20000[i] <= 256) was set to a value that was either too low or too high.
The sampling time must be between 1 ms and the value r20003 - r20002.
If the sampling time of the selected free run-time group is < 1 ms, the equivalent value of 1 ms is used.

If the value >= r20003, then the sampling time is set to the next higher or the same software sampling time >= r21003.

Fault value (r0949, interpret decimal):

Number of the p20000 index of the run-time group where the sampling time is incorrectly set.

Number of the run-time group = fault value + 1

Remedy: - correctly set the sampling time of the run-time group.

- if required, take all of the blocks from the run-time group.

Note:

Fault F50518 only detects an incorrectly parameterized run-time group. If, after correcting p20000[i] in the project, this error occurs again at download, then the run-time group involved should be identified using the fault value (r0949) and the sampling time correctly set.

Appendix A

Content

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 List of abbreviations

Note

The following list of abbreviations includes all abbreviations and their meanings used in the entire SINAMICS family of drives.

Abbreviation	Derivation of abbreviation	Significance
A		
A…	Alarm	Warning
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 coding standard for the exchange of information
AS-i	AS-Interface (Actuator Sensor Interface)	AS-Interface (open bus system in automation technology)
ASM	Asynchronmotor	Induction motor
AVS	Active Vibration Suppression	Active load vibration damping
B		
BB	Betriebsbedingung	Operation condition
BERO	-	Contactless 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
C		
C	Capacitance	Capacitance
C…	-	Safety message
CAN	Controller Area Network	Serial bus system
CBC	Communication Board CAN	Communication Board CAN
CBE	Communication Board Ethernet	PROFINET communication module (Ethernet)
CD	Compact Disc	Compact disc
CDS	Command Data Set	Command data set
CF Card	CompactFlash Card	CompactFlash card

Abbreviation	Derivation of abbreviation	Significance
CI	Connector Input	Connector input
CLC	Clearance Control	Clearance control
CNC	Computerized Numerical Control	Computer-supported numerical control
CO	Connector Output	Connector output
CO/BO	Connector Output/Binector Output	Connector output/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 of a changeover contact
COMM	Commissioning	Startup
CP	Communication Processor	Communication 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	Control Unit DC
D		
DAC	Digital Analog Converter	Digital analog converter
DC	Direct Current	DC 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
DDC	Dynamic Drive Control	Dynamic Drive Control
DDS	Drive Data Set	Drive data set
DI	Digital Input	Digital input
DI/DO	Digital Input/Digital Output	Digital input/output, bidirectional
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 I/O
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
DSM	Doppelsubmodul	Double submodule
DTC	Digital Time Clock	Timer

Abbreviation	Derivation of abbreviation	Significance
E		
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
EGB	Elektrostatisch gefährdete Baugruppen	Electrostatically 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	Pulse enable
EPOS	Einfachpositionierer	Basic positioner
ES	Engineering System	Engineering system
ESB	Ersatzschaltbild	Equivalent circuit diagram
ESD	Electrostatic Sensitive Devices	Electrostatically sensitive devices
ESM	Essential Service Mode	Essential service mode
ESR	Extended Stop and Retract	Extended stop and retract
F		
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	Failsafe Digital Input	Fail-safe digital input
F-DO	Failsafe Digital Output	Fail-safe digital output
FEPROM	Flash-EPROM	Non-volatile write and read memory
FG	Function Generator	Function generator
FI	-	Fault current
FOC	Fiber-Optic Cable	Fiber-optic cable
FP	Funktionsplan	Function diagram
FPGA	Field Programmable Gate Array	Field Programmable Gate Array
FW	Firmware	Firmware
G		
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)

Abbreviation	Derivation of abbreviation	Significance
GSD	Gerätestammdatei	Generic Station Description: Describes the features of a PROFIBUS slave
GSV	Gate Supply Voltage	Gate supply voltage
GUID	Globally Unique Identifier	Globally Unique Identifier
H		
HF	High frequency	High frequency
HFD	Hochfrequenzdrossel	Radio frequency reactor
HLA	Hydraulic Linear Actuator	Hydraulic linear actuator
HLG	Hochlaufgeber	Ramp-function generator
HM	Hydraulic Module	Hydraulic Module
HMI	Human Machine Interface	Human Machine Interface
HTL	High-Threshold Logic	Logic with high interference threshold
HW	Hardware	Hardware
I		
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	Startup
ID	Identifier	Identification
IE	Industrial Ethernet	Industrial Ethernet
IEC	International Electrotechnical Commission	International Electrotechnical Commission
IF	Interface	Interface
IGBT	Insulated Gate Bipolar Transistor	Insulated gate bipolar transistor
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
J		
JOG	Jogging	Jogging
K		
KDV	Kreuzweiser Datenvergleich	Data cross-check
KHP	Know-how protection	Know-how protection
KIP	Kinetische Pufferung	Kinetic buffering
Kp	-	Proportional gain
KTY84	-	Temperature sensor
L		
L	-	Symbol for inductance
LED	Light Emitting Diode	Light emitting diode

Abbreviation	Derivation of abbreviation	Significance
LIN	Linearmotor	Linear motor
LR	Lageregler	Position controller
LSB	Least Significant Bit	Least significant bit
LSC	Line-Side Converter	Line-side converter
LSS	Line-Side Switch	Line-side switch
LU	Length Unit	Length unit
LWL	Lichtwellenleiter	Fiber-optic cable
M		
M	-	Symbol for torque
M	Masse	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
N		
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 association in USA (United States of America)
NM	Nullmarke	Zero mark
NO	Normally Open (contact)	NO contact
NSR	Netzstromrichter	Line-side converter
NTP	Network Time Protocol	Standard for synchronization of the time of day
NVRAM	Non-Volatile Random Access Memory	Non-volatile read/write memory

Abbreviation	Derivation of abbreviation	Significance
O		
OA	Open Architecture	Software component which provides additional functions for the SINAMICS drive system
OAIF	Open Architecture Interface	Version of the SINAMICS firmware as of 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	Operation condition
OCC	One Cable Connection	One-cable technology
OEM	Original Equipment Manufacturer	Original equipment manufacturer
OLP	Optical Link Plug	Bus connector for fiber-optic cable
OMI	Option Module Interface	Option Module Interface
P		
p…	-	Adjustable parameters
P1	Processor 1	Processor 1
P2	Processor 2	Processor 2
PB	PROFIBUS	PROFIBUS
PcCtrl	PC Control	Master control
PD	PROFIdrive	PROFIdrive
PDC	Precision Drive Control	Precision Drive Control
PDS	Power unit Data Set	Power unit data set
PDS	Power Drive System	Drive system
PE	Protective Earth	Protective ground
PELV	Protective Extra Low Voltage	Safety extra-low voltage
PFH	Probability of dangerous failure per hour	Probability of dangerous failure per hour
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
PMSM	Permanent-magnet synchronous motor	Permanent-magnet synchronous motor
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
PT1000	-	Temperature sensor
PTC	Positive Temperature Coefficient	Positive temperature coefficient
PTP	Point To Point	Point-to-point

Abbreviation	Derivation of abbreviation	Significance
PWM	Pulse Width Modulation	Pulse width modulation
PZD	Prozessdaten	Process data
Q		
R		
r…	-	Display parameters (read only)
RAM	Random Access Memory	Memory for reading and writing
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
REL	Reluctance motor textile	Reluctance motor textile
RESM	Reluctance synchronous motor	Synchronous reluctance motor
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
RO	Read Only	Read only
ROM	Read-Only Memory	Read-only memory
RPDO	Receive Process Data Object	Receive Process Data Object
RS232	Recommended Standard 232	Interface standard for a cable-connected serial data transmission between a transmitter 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 transmitters and receivers, also known as EIA485)
RTC	Real Time Clock	Real-time clock
RZA	Raumzeigerapproximation	Space-vector approximation
S		
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
SCC	Safety Control Channel	Safety Control Channel
SCSE	Single Channel Safety Encoder	Single-channel safety encoder
SD Card	SecureDigital Card	Secure digital memory card
SDC	Standard Drive Control	Standard Drive Control
SDI	Safe Direction	Safe motion direction
SE	Sicherer Software-Endschalter	Safe software limit switch

Abbreviation	Derivation of abbreviation	Significance
SESM	Separately-excited synchronous motor	Separately excited synchronous motor
SG	Sicher reduzierte Geschwindigkeit	Safely-limited speed
SGA	Sicherheitsgerichteter Ausgang	Safety-related output
SGE	Sicherheitsgerichteter Eingang	Safety-related input
SH	Sicherer Halt	Safe stop
SI	Safety Integrated	Safety Integrated
SIC	Safety Info Channel	Safety Info Channel
SIL	Safety Integrity Level	Safety integrity level
SITOP	-	Siemens power supply system
SLA	Safely-Limited Acceleration	Safety limited acceleration
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	Sensorless vector control
SM	Sensor Module	Sensor Module
SMC	Sensor Module Cabinet	Sensor Module Cabinet
SME	Sensor Module External	Sensor Module External
SMI	SINAMICS 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
SPI	Serial Peripheral Interface	Serial peripheral interface
SPS	Speicherprogrammierbare Steuerung	Programmable logic controller
SS1	Safe Stop 1	Safe Stop 1 (time-monitored, ramp-monitored)
SS1E	Safe Stop 1 External	Safe Stop 1 with external stop
SS2	Safe Stop 2	Safe Stop 2
SS2E	Safe Stop 2 External	Safe Stop 2 with external stop
SSI	Synchronous Serial Interface	Synchronous serial interface
SSL	Secure Sockets Layer	Encryption protocol for secure data transfer (new TLS)
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
T		
TB	Terminal Board	Terminal Board
TEC	Technology Extension	Software component which is installed as an additional technology package and which expands the functionality of SINAMICS (previously OA-application)

Abbreviation	Derivation of abbreviation	Significance
TIA	Totally Integrated Automation	Totally Integrated Automation
TLS	Transport Layer Security	Encryption protocol for secure data transfer (previously SSL)
TM	Terminal Module	Terminal Module
TN	Terre Neutre	Grounded three-phase line supply
Tn	-	Integral time
TPDO	Transmit Process Data Object	Transmit Process Data Object
TSN	Time-Sensitive Networking	Time-Sensitive Networking
TT	Terre Terre	Grounded three-phase line supply
TTL	Transistor-Transistor Logic	Transistor-transistor logic
Tv	-	Rate time
U		
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
V		
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
W		
WEA	Wiedereinschaltautomatik	Automatic restart
WZM	Werkzeugmaschine	Machine tool
X		
XML	Extensible Markup Language	Extensible markup language (standard language for Web publishing and document management)
Y		
Z		
ZK	Zwischenkreis	DC link
ZM	Zero Mark	Zero mark
ZSW	Zustandswort	Status word

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