

SINAMICS S110

Free function blocks

Function Manual · 10/2008

SINAMICS

SIEMENS

SIEMENS

SINAMICS

SINAMICS S110 Free function blocks

Function Manual

Valid for

Drive

SINAMICS S110

Firmware version

4.1

Preface

General description

Parameters

Function diagrams

Faults and Alarms

List of abbreviations

Index

1

2

3

4

A

B

Safety information

These operating instructions contain information that you should observe to ensure your own personal safety as well as to protect the product and connected equipment. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol; notices referring to property damage only have no safety alert symbol. The notices shown below are graded according to the level of danger:



DANGER

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



WARNING

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



CAUTION

with a safety alert symbol, indicates that minor personal injury **may** result if proper precautions are not taken.

CAUTION

without a safety alert symbol, indicates that property damage may result if proper precautions are not taken.

NOTICE

Means an undesirable result or state may occur if the relevant instructions are not observed.

If more than one level of danger exists, the warning for the highest level of danger is used. A warning with a warning triangle indicating possible injury to personnel may also include a warning relating to property damage.

Qualified personnel

The associated device/system may only be installed and operated in conjunction with this documentation. The equipment / system may only be commissioned and operated by **qualified personnel**. For the purpose of the safety information in these Operating Instructions, a "qualified person" is someone who is authorized to energize, ground, and tag equipment, systems, and circuits in accordance with established safety procedures.

Proper use of Siemens products

Please 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 used, they must be recommended or approved by Siemens. To ensure proper and safe operation of these products, they must be correctly transported, stored, set up, mounted, installed, commissioned, operated and maintained. The permissible ambient conditions must be met. Information in the associated documentation must be observed.

Trademarks

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

Copyright Siemens AG 2008 All Rights Reserved

The reproduction, transmission, or use of this document or its contents is not permitted without express written permission. Violation of this rule can lead to claims for damage compensation. All rights reserved, especially those relating to granting patents or GM registration.

Siemens AG
Industry Sector
P.O. Box 4848
90327 NUREMBERG
GERMANY

Liability Disclaimer

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

© Siemens AG 2008
Subject to change without prior notice

Preface

Information about the SINAMICS documentation

The SINAMICS documentation is organized in two parts:

- General documentation/Catalogs
- Manufacturer/service documentation

This documentation is part of the technical customer documentation for SINAMICS.

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

The contents of this documentation are not part of an earlier or existing agreement, a promise, or a legal agreement, nor do they change this. Any obligations on the part of Siemens arise from the respective Purchase Agreement, which also contains the solely valid warranty conditions in full. These contractual warranty provisions are neither extended nor curbed as a result of the statements made in this documentation.

Target group

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

Aims

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

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

Search tools

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

1. Contents
 - General table of contents for the complete manual (after the preface).
 - Table of contents for function diagrams (Chapter 3.1)
2. List of abbreviations
3. Index (Index)

Technical support

Should you have any questions about our products and systems, then please contact the following hotline:

European and African time zones

Tel. +49 (0) 180 5050 - 222

Fax: +49 (0) 180 5050 - 223

Internet: <http://www.siemens.com/automation/support-request>

Asia and Australia time zone

Tel. +86 1064 719 990

Internet: <http://www.siemens.com/automation/support-request>

America time zone

Tel. +1 423 262 2522

Internet: <http://www.siemens.com/automation/support-request>

Note:

Country telephone numbers for technical support are provided under the following Internet address:

<http://www.siemens.com/automation/service&support>

Calls are subject to charge (e.g. 0.14 €/min on the German landline network). Tariffs of other telephone service providers may vary.

Product information

Information about SINAMICS can be found on the Internet at the following address:

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

Contents

1	General description	1-9
1.1	Overview of free function blocks	1-10
1.1.1	Field of application, characteristics	1-10
1.1.2	Configuration and operation	1-10
1.1.3	Execution group, sampling time, and execution sequence	1-11
1.1.4	Range of modules	1-15
1.1.5	Connection to the drive	1-16
1.2	Commissioning	1-21
1.2.1	Activating the "Free blocks" function modules	1-21
1.2.2	Activating the individual function blocks	1-22
1.2.3	Computation time load	1-23
1.2.4	Number of possible different hardware sampling times	1-24
1.3	Description of the function blocks	1-26
1.3.1	AND	1-26
1.3.2	OR	1-26
1.3.3	XOR (exclusive OR)	1-27
1.3.4	NOT (inverter)	1-27
1.3.5	ADD (adder)	1-28
1.3.6	SUB (subtractor)	1-28
1.3.7	MUL (multiplier)	1-29
1.3.8	DIV (divider)	1-29
1.3.9	AVA (absolute value generator with sign evaluation)	1-30
1.3.10	MFP (pulse generator)	1-30
1.3.11	PCL (pulse contractor)	1-31
1.3.12	PDE (ON delay)	1-32
1.3.13	PDF (OFF delay)	1-33
1.3.14	PST (pulse stretcher)	1-34
1.3.15	RSR (RS flip-flop, reset dominant)	1-34
1.3.16	DFR (D flip-flop, reset dominant)	1-35
1.3.17	BSW (binary switch)	1-36
1.3.18	NSW (numeric switch)	1-36
1.3.19	LIM (limiter)	1-37
1.3.20	PT1 (smoothing element)	1-38
1.3.21	INT (integrator)	1-39
1.3.22	DIF (derivative-action element)	1-40
1.3.23	LVM (double-sided threshold alarm with hysteresis)	1-41
2	Parameters	2-43
2.1	Overview of parameters	2-44
2.1.1	Explanation of list of parameters	2-44
2.2	List of parameters	2-53

3	Function diagrams	3-123
3.1	Table of Contents	3-124
3.2	Explanations for the function diagrams	3-125
3.3	Logic function blocks	3-127
3.4	Arithmetic function blocks	3-132
3.5	Time function blocks	3-136
3.6	Memory function blocks	3-140
3.7	Switch function blocks	3-142
3.8	Control function blocks	3-144
3.9	Complex function blocks	3-148
4	Faults and Alarms	4-151
4.1	Overview of faults and alarms	4-152
4.1.1	General information about faults and alarms	4-152
4.1.2	Explanation of the list of faults and alarms	4-157
4.2	List of faults and alarms	4-160
A	List of abbreviations	A-163
B	Index	B-171

General description

1

Contents

1.1	Overview of free function blocks	1-10
1.2	Commissioning	1-21
1.3	Description of the function blocks	1-26

1.1 Overview of free function blocks

1.1.1 Field of application, characteristics

A logic operation, which connects several states (e.g. access control, plant status) to a control signal (e.g. ON command), is required for controlling the drive system in a wide variety of applications.

As well as logic operations, a number of arithmetical operations / storing elements are becoming increasingly important in drive systems.

This functionality is only available as a "Free blocks" function module (FBLOCKS) on the SERVO drive object type of SINAMICS S110.

In the free function blocks, analog signals are treated as dimensionless reference variables (See Section 1.1.5)

Note

This additional functionality increases the computing time load, which means that the maximum possible configuration with a Control Unit may be restricted (See Section 1.2.3).

1.1.2 Configuration and operation

The free function blocks are configured at parameter level. The following parameters are required for this:

- Input parameters (e.g. inputs 10 ... 13 for the AND function block)
- Output parameters (e.g. output Y for the numeric change-over switch)
- Setting parameters (e.g. pulse duration for pulse generator MFP)
- Execution group (this includes the sampling time; the free function blocks are not computed in the factory setting)
- Execution sequence within the execution group

A parameter is assigned to each input, output, and setting variable. These can be accessed with the STARTER commissioning software or via the BOP. The "Free blocks" can all be interconnected at BICO level.

The "free blocks" do not support data set dependency.

1.1.3 Execution group, sampling time, and execution sequence

Execution groups

Execution groups are groups of free function blocks within the system that are computed in the same sampling time and at a specific time.

A total of 10+1 "execution groups" (execution group 0 to 9 and execution group 9999 (= execution group is not computed)) are available for which the sampling time can be set in specific intervals.

Each function block is assigned one execution group via a parameter. In the factory setting, the value 9999 (i.e. the function block is not computed) is assigned to each function block.

Example:

For function block ADD 0 (See Section 3.4, function diagram 7220), the execution group is set in p20096.

The execution groups are divided into one "fixed execution group" and several "free execution group".

- The "fixed execution group" is called at a fixed position in the system sequence.
The only fixed execution group (p20000[x] = 9003) is arranged before the setpoint channel and is computed in the sampling time of the setpoint channel (4 ms).
This set value is only available with the SERVO drive object type.
- The "free execution groups" are only defined via their sampling time.

Note

If the same sampling time is assigned to two or more execution groups (the same fixed or free execution group), the execution groups are processed in numerical order.

Example:

p20000[0] = p20000[3] = p20000[9] = 9003

The computing sequence is:

execution group 0 first, then execution group 3, then execution group 9, and then the setpoint channel.

The minimum sampling time is 1 ms.

The current sampling time in ms is displayed for each execution group in parameter r20001[0...9].

In the factory setting, none of the execution groups is called (p20000[x] = 0).

Sampling times

Two types of sampling times are available for execution groups:

- Sampling times generated in the hardware:

With the hardware sampling times, each integer multiple of the basic sampling time (read only in r20002) ranging from 1 x r20002 to 256 x r20002 can be generated in p20000[0...9] with the following limits:

- Min. sampling time = 1 ms
- Max. sampling time = r20003 - r20002

Note

When configuration is carried out offline by means of the STARTER commissioning software, values 0 ... 256 can be entered in p20000[x] even if this violates the above-mentioned limits for the hardware sampling times of 1 ms ... r20003 - r20003 and r20003.

This is not detected until the Control Unit is downloaded and results in fault F01042 (parameter error during project download).

The basic sampling time for the SERVO drive object type in SINAMICS S110 is as follows:

r20002 = 0.25 ms (current controller sampling time)

- Sampling times generated in the software:

These sampling times are generated as integer multiples of the basic value for software sampling times and must be read in parameter r20003 when the "Free blocks" function module is active.

For the possible set values for the software sampling times, refer to the parameter description for p20000 (See Section 2.2).

Note

When p20000[k] = 0, the corresponding execution group (and, in turn, all the associated function blocks) is not computed.

The sampling time of execution group k is displayed in r20001[k] in ms.

Example for the adjustable sampling times in SINAMICS S110:

The basic sampling time (r20002) on the SERVO drive object is 250 µs, which means that the following sampling times are possible:

- Hardware sampling times:
 - p20000[x] = 0 (execution group not computed)
 - p20000[x] = 1 x 250 µs = 250 µs (not permitted because less than 1 ms)
 - p20000[x] = 2 x 250 µs = 500 µs (not permitted because less than 1 ms)
 - p20000[x] = 3 x 250 µs = 750 µs (not permitted because less than 1 ms)
 - p20000[x] = 4 x 250 µs = 1000 µs
 - p20000[x] = 5 x 250 µs = 1250 µs
 - ...
 - p20000[x] = 31 x 250 µs = 7750 µs (can be selected as a multiple of r20002, but is not a software sampling time)
 - p20000[x] = 32 x 250 µs = 8000 µs
 - p20000[x] = 33 x 250 µs = 8250 µs (rejected because greater than 8 ms)
- The settings below are no longer possible because the sampling times would exceed 8 ms.

The basic value of the software sampling time is: r20003 = 8 ms.

- Software sampling times:
 - p20000[x] = 1001: sampling time = 1 x 8 ms = 8 ms
 - p20000[x] = 1002: sampling time = 2 x 8 ms = 16 ms
 - p20000[x] = 1003: sampling time = 3 x 8 ms = 24 ms
 - p20000[x] = 1004: sampling time = 4 x 8 ms = 32 ms
 - p20000[x] = 1005: sampling time = 5 x 8 ms = 40 ms
 - p20000[x] = 1006: sampling time = 6 x 8 ms = 48 ms
 - p20000[x] = 1008: sampling time = 8 x 8 ms = 64 ms
 - p20000[x] = 1010: sampling time = 10 x 8 ms = 80 ms
 - p20000[x] = 1012: sampling time = 12 x 8 ms = 96 ms
 - p20000[x] = 1016: sampling time = 16 x 8 ms = 128 ms
 - p20000[x] = 1020: sampling time = 20 x 8 ms = 160 ms
 - p20000[x] = 1024: sampling time = 24 x 8 ms = 192 ms
 - p20000[x] = 1032: sampling time = 32 x 8 ms = 256 ms
 - p20000[x] = 1040: sampling time = 40 x 8 ms = 320 ms
 - p20000[x] = 1048: sampling time = 48 x 8 ms = 384 ms
 - p20000[x] = 1064: sampling time = 64 x 8 ms = 512 ms
 - p20000[x] = 1096: sampling time = 96 x 8 ms = 768 ms

Note

The missing intermediate values are not permitted by the system.

Execution sequence

In the factory setting, each free function block is assigned a default setting for the execution sequence. The execution sequence of consecutive free function blocks within an execution group can be optimized by changing these values accordingly.

An execution sequence value can be used on a drive object once only. If the same execution sequence value is assigned twice in online mode for a drive object, the second value is rejected and the first value retained.

The execution sequence can be set to between 0 and 32000. A function block with a lower execution sequence value is computed within an execution group before one with a higher value.

Note:

If configuration is carried out offline, you can initially set each execution sequence value (e.g. a value can also be assigned to more than one function block simultaneously). The system does not check this until the configuration has been downloaded to the Control Unit.

Once downloaded, the parameter values are checked in the order of the parameter numbers. If the system detects that the execution sequence value for one function block is already being used by a different function block, the value is not applied and fault F01042 (message in STARTER: Error has occurred during download) is output. You are informed of this in the "Target system output" window.

Note:

In the factory setting, value range 10 ... 750 is already assigned the execution sequence values of the function blocks.

In user configurations, for example, only execution sequence values as of 1000 should be used to avoid conflicts during the download with the execution sequence values that have already been assigned.

If at all possible, the process signals for a drive object should only be processed by the function blocks on this drive object.

1.1.4 Range of modules

The table below shows the range of free function blocks available. For information about the special technical properties of the individual function blocks, see the function diagrams in Chapter 3.

Table 1-1 Range of "Free blocks"

Code	Name of function block	Data type	No. per drive object
AND	AND function block	BOOL	4
OR	OR function block	BOOL	4
XOR	XOR function block	BOOL	4
NOT	Inverter	BOOL	4
ADD	Adder	REAL	2
SUB	Subtractor	REAL	2
MUL	Multiplier	REAL	2
DIV	Divider	REAL	2
AVA	Absolute value generator with sign evaluation	REAL	2
MFP	Pulse generator	BOOL	2
PCL	Pulse contractor	BOOL	2
PDE	ON delay	BOOL	2
PDF	OFF delay	BOOL	2
PST	Pulse stretcher	BOOL	2
RSR	RS flip-flop, reset dominant	BOOL	2
DFR	D flip-flop, reset dominant	BOOL	2
BSW	Binary switch	BOOL	2
NSW	Numeric switch	REAL	2
LIM	Limiter	REAL	2
PT1	Smoothing element	REAL	2
INT	Integrator	REAL	1
DIF	Derivative-action element	REAL	1
LVM	Double-sided threshold alarm with hysteresis	BOOL	2

1.1.5 Connection to the drive

Connector inputs (CI) and connector outputs (CO) on the free function blocks (p20094 ... p20286) have the characteristics of reference variables, which means that calculations in the free function blocks are only carried out with reference signal values (1.0 = 100 %). Conversion to the connectors of the drive with units is performed automatically.

Note:

This manual only contains the function diagrams for "Free blocks" (see Chapter 3).

The product-specific function diagrams for SINAMICS (e.g. function diagram 3010) can be found in the following documents:

References: SINAMICS S110 List Manual ("Function diagrams")

Example 1 (interconnecting the input value)

The current fixed speed setpoint (CO: r1024, function diagram 3010) is to be read to the free function block ADD 0 (function diagram 7220) for further processing.

p20094[0] is set to 1024 for this purpose.

Function block ADD 0 is to be called cyclically and is, therefore, assigned to execution group 9. It is also to be called with the sampling time $2 \times r20003$. The execution group number is chosen here at random.

p20096 is set to 9 and p20000[9] is set to 1002.

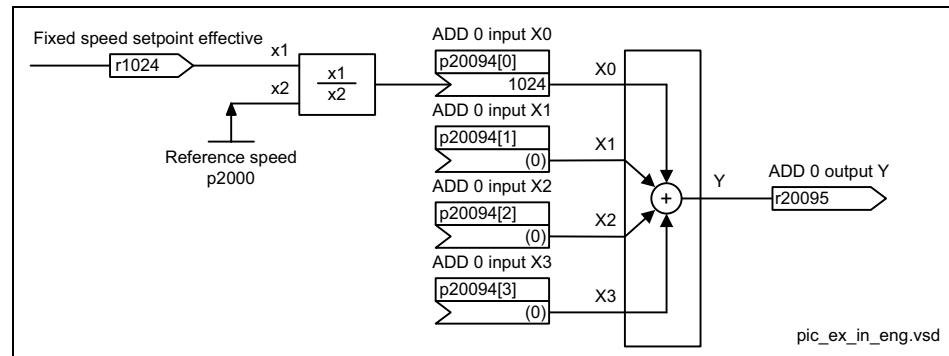


Figure 1-1 Example 1: interconnecting the input value

Input signal r1024 with the unit rpm is referred to its reference variable p2000.

Assumption:

- r1024 = 1500 rpm
- p2000 = 3000 rpm reference speed

Result:

- r20095 = 0.5

Example 2 (interconnecting the output value)

The reference output value of the free function block LIM 0 (function diagram 7260) is to be switched in as additional torque $M_{\text{additional 2}}$ (function diagram 5060) in SERVO control mode.

p1513[0] is set to 20231 for this purpose.

Function block LIM 0 is to be called cyclically and is, therefore, assigned to execution group 8.

p20234 is set to 8.

The execution group number is chosen here at random.

The sampling time for calling LIM 0 is to be 1 ms.

p20000[8] is set to 4 ($= 4 \times r20002 = 4 \times 250 \mu\text{s} = 1 \text{ ms}$)

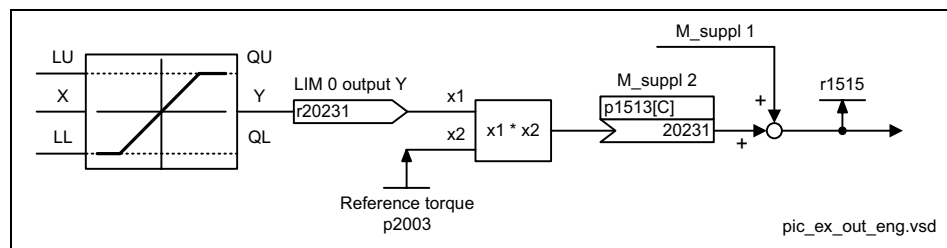


Figure 1-2 Example 2: Interconnecting the output value

Due to the interconnection of p1513 (additional torque 2) to r20231, the reference output signal Y of the function block is multiplied internally with the reference torque p2003 and interpreted as additional torque with units.

Assumption:

- Basic sampling time: $r20002 = 0.25 \text{ ms}$
- $r20231 = 0.3333$
- $p2003 = 300 \text{ Nm}$ reference torque
- $p1511[0] = 0$ (additional torque 1 = "0")
- $p1513[0] = 20231$

Result:

- $r1515 = 100.0 \text{ Nm}$ (for CDS0)

Example 3 (interconnecting the PROFIBUS receive word (WORD))

PZD receive word 2 (CO: r2050[1], function diagram 2460) is to be interconnected with the free function block ADD 0 (function diagram 7220).

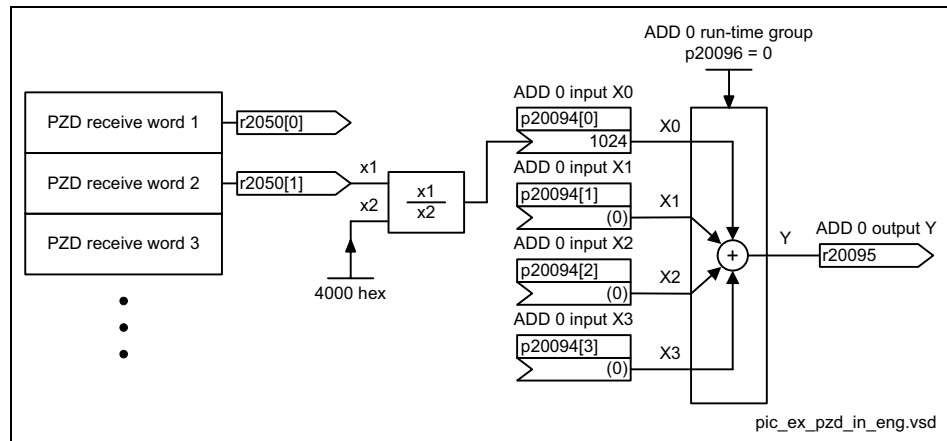


Figure 1-3 Example 3: Interconnecting the PROFIBUS receive word (WORD)

The PROFIBUS process data of data type WORD (16 bits) has the reference variable 4000 hex. At the inputs of the free function blocks, this reference variable is equivalent to 1.0.

Assumption:

- p20096 = 0
Assign function block ADD 0 to execution group 0.
- p20000[0] = 1002
Call execution group 0 with the sampling time 2 x r20003. The execution group number 0 was chosen at random.
- PROFIBUS receive word 2: r2050[1] = 6000 hex

Result:

- $r20095 = (6000 \text{ hex} / 4000 \text{ hex}) \times 1.0 = 1.5$

Example 4 (interconnecting the PROFIBUS transmit word (DWORD))

The output of the free function block LIM 1 (CO: r20234, function diagram 7260) is to be interconnected with a PZD transmit word (function diagram 2470) of data type DWORD.

The input of the free function block LIM 1 is supplied with a fixed speed setpoint (p1002, function diagram 3010).

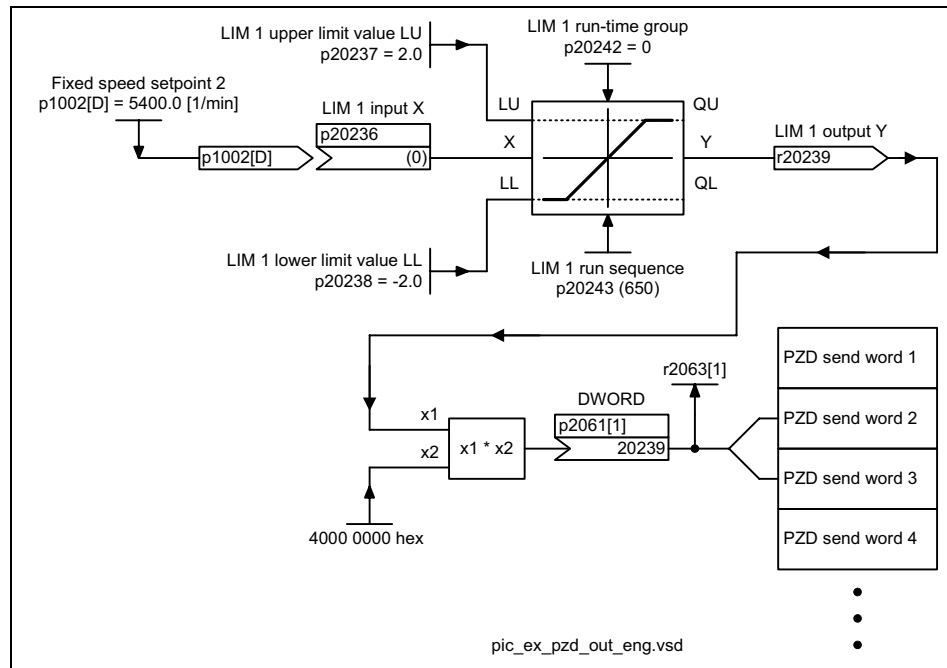


Figure 1-4 Example 4: Interconnecting the PROFIBUS transmit word (DWORD)

The PROFIBUS process data of data type DWORD (32 bits) has the reference variable 4000 0000 hex. At the outputs of the free function blocks, this reference variable is equivalent to 1.0. Parameter r2063 is only updated when cyclic data exchange actually takes place on PROFIBUS.

Assumption:

- p20000[0] = 1002
Call execution group 0 with the sampling time 2 x r20003. The execution group number 0 was chosen at random.
- p1002 = 5400 rpm
- p2000 = 3000 rpm

Result:

- Output value of LIM 1: r20239 = 5400 rpm / 3000 rpm = 1.8
- r2063[1] = X1 x X2 = 1.8 x 4000 0000 hex = 7333 3333 hex

1.2 Commissioning

1.2.1 Activating the "Free blocks" function modules

STARTER commissioning software

Free function blocks can **only** be activated with the STARTER commissioning software offline and is carried out via the "Properties" dialog box for the drive objects. The free function blocks can be selected on the "Function modules" tab page.

To do so, open the relevant project in STARTER and, in the project navigator, open the sub-elements by clicking the plus sign.

To call up a context menu, right-click the selected drive object. Select "Properties" and "Function modules". Scroll to "Free blocks". Select this function module (set the checkbox) and confirm with "OK". The properties dialog is then closed automatically.

In its default setting, the "Free blocks" checkbox is not selected. If you select the checkbox and confirm with "OK", the "Free blocks" function module is activated once the project has been downloaded.

1.2.2 Activating the individual function blocks

Each individual function block is assigned to an execution group via two parameters.

- The first parameter defines the execution group.
- The second parameter defines the execution sequence within the execution group.

Within an execution group, a function block with a lower value for the execution sequence is computed before a function block with a higher value.

Note

In the factory setting, each function block is assigned to execution group 9999, which means that the function block is not computed.

You also have to ensure that execution group x is called cyclically. This can be done by setting parameter p20000[x] to a value > 0.

Example:

On the "SERVO" drive object type, the basic software sampling time r20003 is 8 ms. Execution group 0 is to be called every 16 ms.

This means:

Set p20000[0] = 1002 (sampling time 2 x r20003).

Check via r20001[0] = 16.0 ms (sampling time of execution group 0).

1.2.3 Computation time load

Processing free function blocks requires considerable computation time. If the computation time is short, you have to check whether all the activated function modules are required and whether all the function blocks used need to be computed within the same sampling time.

The computation time load can be reduced by either deactivating function modules or assigning used function blocks to an execution group with a longer sampling time.

Dependency

The resulting computing time load depends on the following:

- Number of activated execution groups ($p20000[x] > 0$)
- Number of computed function blocks
- Sampling time

Cumputing time online

The computation time load shown in `r9976[0...7]` does not include the additional load caused by the free function blocks.

NOTICE

For the basic SINAMICS system as of firmware version 4.1, the following applies:

As of this version, the process of determining the computation time load is different. For this reason, `r9976[0...7]` no longer contains the computation time load generated by the "Free blocks".

Offline computation time

When the system is in offline mode, SIZER offers an approximate statement regarding whether a configuration can be computed on SINAMICS S110. The additional computation time load is **not** taken into account when the "Free blocks" function module is activated.

1.2.4 Number of possible different hardware sampling times

The sampling times for the execution groups can be selected in p20000[x] as a multiple of r20002 (basic sampling time of hardware time slices), a multiple of r20003 (basic sampling time of software time slices), or on the basis of the sampling time of basic SINAMICS system function (e.g. when p20000[x] = 9003 == "before setpoint channel" from the sampling time of the setpoint channel).

As hardware sampling times, only sampling times for which the following applies can be set:

$1 \text{ ms} \leq T_{\text{sample}} \leq r20003 - r20002$ in p20000[x]

Sampling time r20003 is always a software sampling time regardless of whether it is set as p20000[x] = 1001 (== 1 x r20003) or as a multiple of r20002 (p20000[x] ≤ 256).

Hardware sampling times, number, and assignment

During configuration, note that the number of hardware sampling times ($1 \text{ ms} \leq \text{cycle duration } T_{\text{sampling}} < r20003 - r20002$) used by the basic SINAMICS system and "Free blocks" is restricted as follows:

- SINAMICS S110 --> no. of hardware sampling times = 11

The assignment of the available hardware sampling times is displayed in r20008[0...12] as follows (STARTER/SCOUT: in online mode only):

- Value = 0.0 --> sampling time not assigned
- Value != 0.0 (not equal to 0.0) --> sampling time in ms
- Value = 9999900.00000 --> sampling time not supported

Note

Note that a long-term trace registers a sampling time "books" a sampling time of 2 ms and the trace registers sampling times in accordance with the selected trace cycle clock. If these sampling times have not already been registered by the basic SINAMICS system or "Free blocks" (FBLOCKS), these functions require additional free hardware sampling times.

The registered hardware sampling times can be read (if the FBLOCKS are activated) in r20008[0...12].

Hardware sampling times, usage

A sampling time can be used simultaneously by more than one execution group of "Free blocks" and the basic SINAMICS system.

For this reason, the execution groups should ideally be registered to existing sampling times or, if more sensible due to the function, the fixed execution group "Before setpoint channel" should be used.

For internal purposes, the drive unit always requires at least two free hardware sampling times, which is why the current number of free hardware sampling times can be read in r7903.

Project download, error message, and procedure

If too many different hardware sampling times are configured offline, an error message is not output until the project is downloaded.

In this case, proceed as follows:

1. In the project in offline mode, set all the free execution groups to which hardware sampling times are assigned to software sampling times.
 - Hardware sampling times ($p20000 < 256$)
 - Software sampling times ($p20000 > 1001$)

The assignment of fixed execution groups ($p20000 = 9003$) does not need to be changed because the fixed execution group uses the same sampling time as the assigned basic SINAMICS system function.

2. Download the project again.
3. Once the project has been downloaded and the Control Unit has booted, check:
 - r7903: Number of hardware sampling times still available
 - r20008: Number of hardware sampling times already registered by the basic SINAMICS system
4. Adjust the execution group parameters accordingly.

Note

The number of different hardware sampling times possible on a Control Unit is restricted. For this reason, software sampling times (multiple of r20003) or, if necessary, the fixed execution group "Before setpoint channel" ($p20000[0...9] = 9003$) should be used.

1.3 Description of the function blocks

1.3.1 AND

Brief description

BOOL-type AND function block with four inputs.

Operating principle

This function block links the binary values at the inputs I to a logical AND and outputs the result to its binary output Q.

$$Q = I_0 \wedge I_1 \wedge I_2 \wedge I_3$$

Output Q = 1 when the value 1 is present at all inputs I0 to I3. In all other cases, output Q = 0.

1.3.2 OR

Brief description

BOOL-type OR function block with four inputs.

Operating principle

This function block links the binary variables at the inputs I to a logic OR (disjunction) and outputs the result to its binary output Q.

$$Q = I_0 \vee I_1 \vee I_2 \vee I_3$$

Output Q = 0 when the value 0 is present at all inputs I0 to I3. In all other cases, output Q = 1.

1.3.3 XOR (exclusive OR)

Brief description

BOOL-type XOR function block with four inputs.

Operating principle

This function block links the binary variables at the inputs I according to the Exclusive OR logic function and outputs the result to its binary output Q.

Output Q = 0 when the value 0 is present at all inputs I0 to I3 or when the value 1 is present at an even number of inputs I0 to I3.

Output Q = 1 when the value 1 is present at an odd number of inputs I0 to I3.

1.3.4 NOT (inverter)

Brief description

BOOL-type inverter

Operating principle

This function block inverts the binary variables at input I and outputs the result to output Q.

$$Q = \bar{I}$$

Output Q = 1 when the value 0 is present at input I.

Output Q = 0 when the value 1 is present at input I.

1.3.5 ADD (adder)

Brief description

REAL-type adder with four inputs.

Operating principle

This function block adds (in accordance with the sign) the values entered at inputs X.

The result is limited to a range of -3.4E38 to 3.4E38 and output at output Y.

$$Y = X_0 + X_1 + X_2 + X_3$$

1.3.6 SUB (subtractor)

Brief description

REAL-type subtracter with two inputs.

Operating principle

This function block subtracts (in accordance with the sign) the value entered at input X1 from the value entered at input X0.

The result is limited to a range of -3.4E38 to 3.4E38 and output at output Y.

$$Y = X_0 - X_1$$

1.3.7 MUL (multiplier)

Brief description

REAL-type multiplier with four inputs.

Operating principle

This function block multiplies (in accordance with the sign) the values entered at inputs X.

The result is limited to a range of -3.4E38 to +3.4E38 and output at output Y.

$$Y = X_0 \cdot X_1 \cdot X_2 \cdot X_3$$

1.3.8 DIV (divider)

Brief description

REAL-type divider with two inputs.

Operating principle

This function block divides the value entered at input X0 by the value entered at input X1.

The result is output at the outputs as follows:

- Y output: Quotient with places before and after the decimal point
- YIN output: Integer quotient
- MOD output: Division rest (absolute residual value)

The Y output is limited to a range of approx. -3.4E38 to +3.4E38.

$$Y = \frac{X_0}{X_1}$$

If output value Y exceeds the permissible value range of approx. -3.4E38 to 3.4E38 (because divisor X1 is very small or zero), the limit value of the output range with the correct sign is output at the Y output. At the same time, binary output QF is set to 1.

With division of 0/0, block output Y remains unchanged. Binary output QF is set to 1.

1.3.9 AVA (absolute value generator with sign evaluation)

Brief description

REAL-type arithmetic function block for generating absolute values.

Operating principle

This function block generates the absolute value of the value present at input X. The result is output at output Y.

$$Y = |X|$$

If the input variable is negative, binary output SN is set to 1.

1.3.10 MFP (pulse generator)

Brief description

- Timer for generating a pulse with a fixed duration.
- Used as a pulse-contracting or pulse-stretching monoflop.

Operating principle

The rising edge of a pulse at input I sets output Q to 1 for the pulse duration. The pulse generator cannot be retriggered.

Time flow chart

Output pulse Q as a function of pulse duration T and input pulse I.

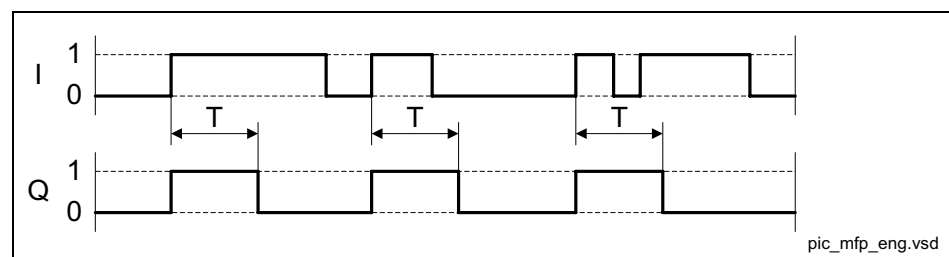


Figure 1-5 MFP (pulse generator): Time flow chart

1.3.11 PCL (pulse contractor)

Brief description

Timer for limiting the pulse duration

Operating principle

The rising edge of a pulse at input I sets output Q to 1.

Output Q becomes 0 when input I is 0 or pulse duration T has expired.

Time flow chart

Output pulse Q as a function of pulse duration T and input pulse I.

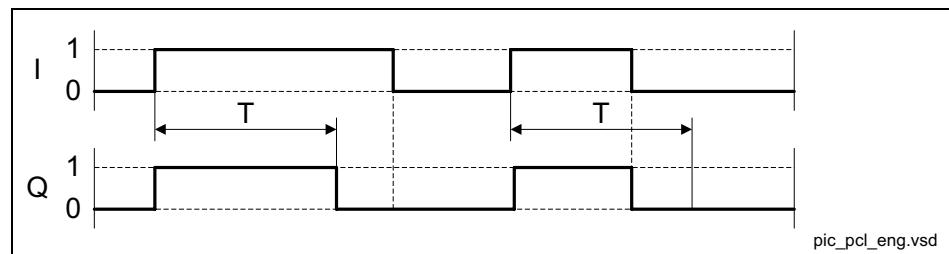


Figure 1-6 PCL (pulse contractor): Time flow chart

1.3.12 PDE (ON delay)

Brief description

BOOL-type timer with ON delay.

Operating principle

The rising edge of a pulse at input I sets output Q to 1 after pulse delay time T.

Output Q become 0 when I is 0.

If the duration of input pulse I is less than pulse delay time T, Q remains 0.

If time T is so long that the maximum value that can be displayed internally (T/t_a as 32 bit value, where t_a = sampling time) is exceeded, the maximum value is set (e.g. when $t_a = 1$ ms, approx. 50 days).

Time flow chart

Output pulse Q as a function of pulse duration T and input pulse I.

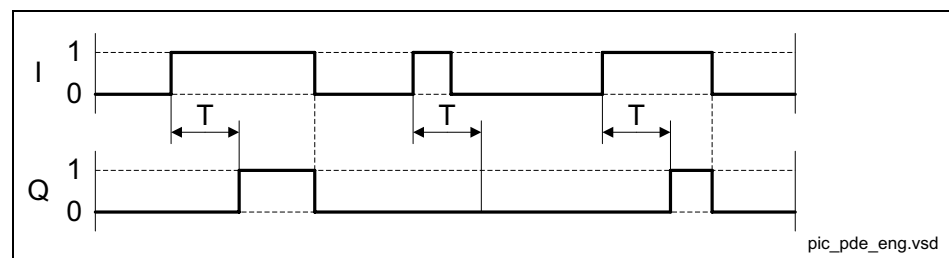


Figure 1-7 PDE (ON delay): Time flow chart

1.3.13 PDF (OFF delay)

Brief description

Timer with OFF delay.

Operating principle

The falling edge of a pulse at input I resets output Q to 0 after OFF delay time T.

Output Q become 1 when I is 1.

Output Q becomes 0 when input pulse I is 0 and OFF delay time T has expired.

If input I is reset to 1 before time T has expired, output Q remains 1.

Time flow chart

Output pulse Q as a function of pulse duration T and input pulse I.

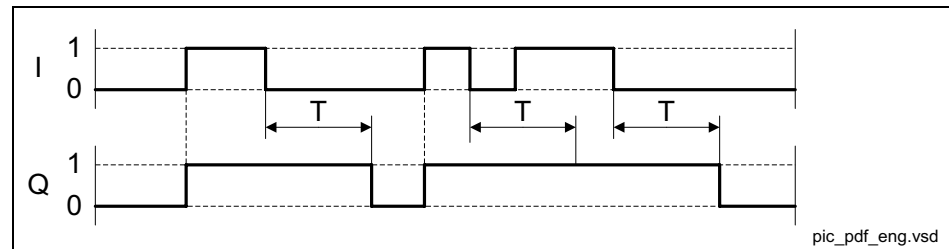


Figure 1-8 PDF (OFF delay): Time flow chart

1.3.14 PST (pulse stretcher)

Brief description

Timer for generating a pulse with a minimum duration and an additional reset input.

Operating principle

The rising edge of a pulse at input I sets output Q to 1.

Output Q does not return to 1 until input pulse I is 0 and pulse duration T has expired.

Output Q can be set to zero at any time via reset input R with $R = 1$.

Time flow chart

Output pulse Q as a function of pulse duration T and input pulse I (when $R = 0$).

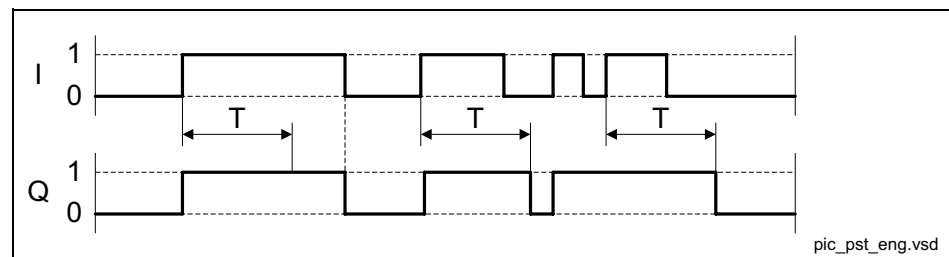


Figure 1-9 PST (pulse stretcher): Time flow chart

1.3.15 RSR (RS flip-flop, reset dominant)

Brief description

Reset dominant RS flip-flop for use as a static binary value memory.

Operating principle

With logical 1 at input S, output Q is set to logical 1.

If input R is set to logical 1, output Q is set to logical 0.

If both inputs are logical 0, Q does not change.

If both inputs are logical 1, however, Q is logical 0 because the reset input dominates.

Output QN always has the value inverse to Q.

1.3.16 DFR (D flip-flop, reset dominant)

Brief description

BOOL-type function block for use as a D flip-flop with reset dominance.

Operating principle

If inputs S and R are logical 0, the D input data is switched through to output Q when a rising edge is present at trigger input I.

Output QN always has the value inverse to Q. With logical 1 at input S, output Q is set to logical 1.

If input R is set to logical 1, output Q is set to logical 0. If both inputs are logical 0, Q does not change.

If inputs S and R are logical 1, however, Q is logical 0 because the reset input dominates.

Time flow chart

Output pulse Q as a function of the D input and input pulse I for S = R = 0.

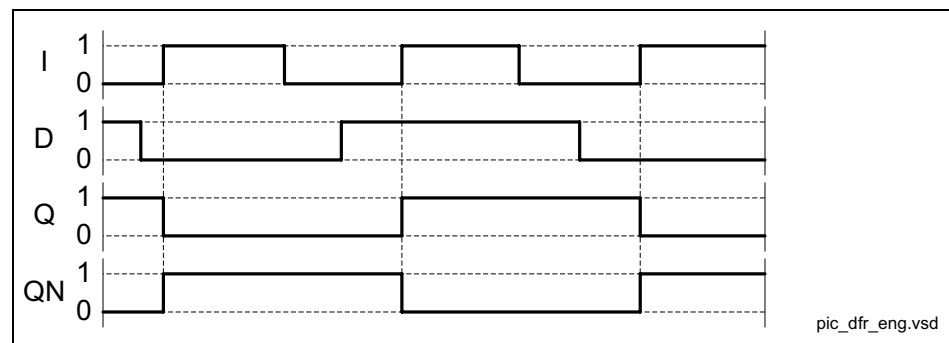


Figure 1-10 DFR (D flip-flop, reset dominant): Time flow chart

1.3.17 **BSW (binary switch)**

Brief description

This function block switches one of two binary input variables (BOOL type) to the output.

Operating principle

If input I is 0, I0 is switched to output Q.

If input I is 1, I1 is switched to output Q.

1.3.18 **NSW (numeric switch)**

Brief description

This function block switches one of two numeric input variables (REAL type) to the output.

Operating principle

If input I is 0, X0 is switched to output Y.

If input I is 1, X1 is switched to output Y.

1.3.19 LIM (limiter)

Brief description

- Function block for limiting.
- Adjustable upper and lower limit
- Indication when set limits are reached

Operating principle

This function block transfers input variable X to its output Y, whereby the input variable is limited depending on LU and LL.

If the input variable reaches the upper limit LU, output QU is set to 1.

If the input variable reaches the lower limit LL, output QL is set to 1.

If the lower limit is greater than or equal to the upper limit, output Y is set to the upper limit LU.

Algorithm:

$$Y = \begin{cases} LU & \text{für } X \geq LU \\ X & \text{für } LL < X < LU \\ LL & \text{für } X \leq LL \end{cases}$$

Constraint: $LL < LU$

1.3.20 PT1 (smoothing element)

Brief description

- First-order delay element with setting function.
- Used as smoothing element.

Operating principle

Setting function not active (S = 0)

Input variable X, dynamically delayed by smoothing time constant T, is switched to output Y.

T determines the steepness of the rise of the output variable. It specifies the time at which the transfer function has risen to 63% of its full-scale value.

When $t = 3T$, the transfer function reaches approximately 95% of its full-scale value.

The internally fixed proportional gain is 1 and cannot be changed.

If T/TA is sufficiently large ($T/TA > 10$), the transfer function has the following characteristic:

$$Y(t) = X \cdot (1 - e^{-t/T})$$

Constraint: $t = n \cdot TA$

The discrete values are calculated according to the following algorithm:

$$Y_n = Y_{n-1} + \frac{TA}{T} \cdot (X_n - Y_{n-1})$$

Y_n Value of Y in sampling interval n

Y_{n-1} Value of Y in sampling interval n-1

X_n Value of X in sampling interval n

Setting function active (S = 1)

When the setting function is active, the current setting value SV_n is accepted at the output variable:

$$Y_n = SV_n$$

Note

The larger T/TA is, the smaller the amplitude change at Y from one sampling instant to the next. TA is the configured sampling time of the function block.

T is limited internally: $T \geq TA$

1.3.21 INT (integrator)

Brief description

- Function block with integral action.
- Integrator functions:
 - Set initial value
 - Adjustable integral time constant
 - Adjustable limits
 - For normal integrator operation, a positive limit value must be specified for LU and a negative limit value for LL.

Operating principle

The change in output variable Y is proportional to input variable X and inversely proportional to the integral time constant TI.

Output Y of the integrator can be limited via the inputs LU and LL. If the output reaches one of the two limits, a message is sent via the outputs QU or QL. If LL >= LU, output Y = LU.

The discrete values (TA is the configured sampling time of the function block) are calculated according to the following algorithm:

$$Y_n = Y_{n-1} + \frac{TA}{TI} \cdot X_n$$

Y_n Value of Y in sampling interval n

Y_{n-1} Value of Y in sampling interval n-1

X_n Value of X in sampling interval n

When S = 1, the output variable Y is set to the setting value SV. Two functions can be realized via S:

- Track integrator (Y = SV)

The binary input is S = 1 and the setting value SV is changed. If applicable, the output makes a jump to the setting value immediately after the setting operation.

- Set integrator to initial value SV

S is switched to 1. S is then set to 0, and the integrator starts from SV in the direction specified by the polarity of input variable X.

Note

TI is limited internally: TI >= TA

1.3.22 DIF (derivative-action element)

Brief description

Function block with derivative-action behavior.

Operating principle

Output variable Y is proportional to the rate of change of input variable X multiplied by derivative-action time constant TD.

The discrete values are calculated according to the following algorithm:

$$Y_n = (X_n - X_{n-1}) \cdot \frac{TD}{TA}$$

Y_n Value of Y in sampling interval n

Y_{n-1} Value of Y in sampling interval n-1

X_n Value of X in sampling interval n

Note

The bigger TD/TA is, the bigger is the amplitude change on Y from one scan time to the next. TA is the configured sampling time of the function block.

TD is limited internally to TD ≥ 0.

Caution: Overload is possible!

1.3.23 LVM (double-sided threshold alarm with hysteresis)

Brief description

- This BOOL-type function block monitors an input variable by comparing it with selectable reference variables.
- Application:
 - Monitoring setpoints, actual, and measured values.
 - Suppressing frequent switching (jitter).
- This function block provides a window discriminator function.

Operating principle

This function block uses a transfer characteristic (see transfer characteristic) with hysteresis to calculate an internal intermediate value.

The intermediate value is compared with the interval limits and the result is output at outputs QU, QM, and QL.

The transfer characteristic is configured with the values for the mean value M, the interval limit L, and the hysteresis HY.

Transfer characteristic

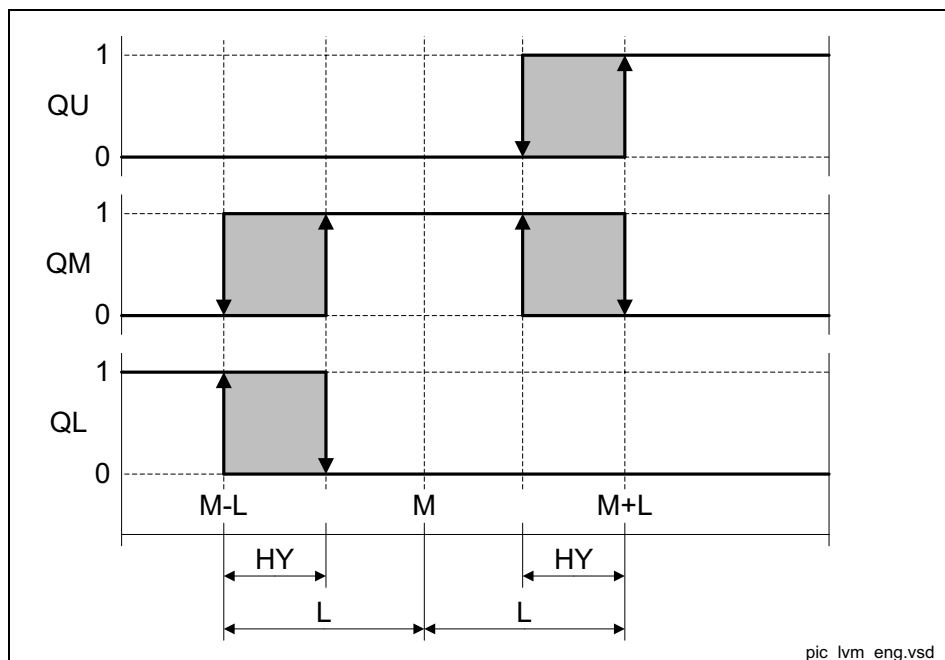


Figure 1-11 LVM (double-sided threshold alarm with hysteresis): Transfer characteristic

Parameters

2

Contents

2.1	Overview of parameters	2-44
2.2	List of parameters	2-53

2.1 Overview of parameters




2.1.1 Explanation of list of parameters

Basic structure of parameter descriptions

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

The parameter list (See Section 2.2) is structured as follows:

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

pxxxx[0...n]	BICO: Full parameter name / Abbreviated name				
Drive object (function module)	Changeable in: C1(x), C2(x), U, T	are calculated: CALC_MOD_REG		Access level: 2	
	Data type: Unsigned32 / Integer16	Dynamic index: CDS, p0170		Function diagram: 2080	
	P group: Closed-loop control	Unit group: 7_1		Unit selection: p0505	
	Not for motor type: FEM			Expert list: 1	
	Min 0.00 [Nm]	Max 10.00 [Nm]		Factory setting 0.00 [Aeff]	
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	8010
	01	Name and meaning of bit 1	Yes	No	-
	02	Name and meaning of bit 2	Yes	No	8012
		etc.			
Dependency:	Text See also: pxxxx, rxxxx See also: Fxxxxx, Axxxxx				
Danger!	Warning!	Caution:	Corresponds to safety notice "Caution with warning triangle".		
					
Caution:	Notice:	Corresponds to safety notice "Notice without warning triangle".			
Note:	Information which might be useful.				

pxxxx[0...n] Parameter number

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

Examples of number representation in the parameter list:

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

Other examples of notation in the documentation:

- p1070[1] Adjustable parameter 1070, index 1
- p2098[1].3 Adjustable parameter 2098, index 1 bit 3
- r0945[2](3) Display parameter 945, index 2 of drive object 3
- p0795.4 Adjustable parameter 795, bit 4

The following applies to adjustable parameters:

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

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

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

- Execute macros
p0015, p0700, p1000, p1500
- Set PROFIBUS telegram (BICO interconnection)
p0922
- Set component lists
p0230, p0300, p0301, p0400
- Calculate and preset automatically
p0112, p0340, p0578, p3900
- Restore factory settings
p0970

The following applies to display parameters:

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

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 parameter name:

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

Drive object (function module)

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

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

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

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

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

Table 2-1 Data in "Drive object (function module)" field

Drive object (function module)	Meaning
SERVO_S110 (FBL)	Drive object type for which the "Free blocks" function module (FBL) can be activated (See Section 1.1.1).

Changeable in

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

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

The following states may be specified:

- C1(x) Device commissioning C1: **Commissioning 1**
 Converter commissioning is in progress (p0009>0).
 Pulses cannot be enabled.
 The parameter can only be changed in the following device commissioning settings (p0009 > 0):
 - C1: Changeable for all settings p0009 > 0.
 - C1(x): Only changeable when p0009 = x.
 A modified parameter value does not take effect until converter commissioning mode is exited with p0009 = 0.
- C2(x) Drive object commissioning C2: **Commissioning 2**
 Drive commissioning is in progress (p0009 = 0 and p0010 > 0).
 Pulses cannot be enabled.
 The parameter can only be changed in the following drive commissioning settings (p0010 > 0):
 - C2: Changeable for all settings p0010 > 0.
 - C2(x): Only changeable when p0010 = x.
 A modified parameter value does not take effect until drive commissioning mode is exited with p0010 = 0.
- U Operation U: **Run**
 Pulses are enabled.
- T Ready for operation T: **Ready to run**
 The pulses are not enabled and status "C1(x)" or "C2(x)" is not active.

Note:

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

Parameter p0010 is drive specific (belongs to each drive object).

The operating status of individual drive objects is displayed in r0002.

Calculated

This information is not relevant to the "Free blocks" function.

Access level

Specifies the access level required for displaying and changing the relevant parameter. The required access level can be set via p0003.

The system uses the following access levels:

1. Standard
2. Enhanced
3. Expert
4. Service
5. Macro (the parameter can only be changed via macro)

Note:

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

Data type

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

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

The possible data types of parameters are as follows:

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

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

Table 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: Integer16	x	x	–	–
CO: Unsigned32	x	x	–	–
CO: Integer32	x	x	–	–
CO: FloatingPoint32	x	x	x ¹	–
BO: Unsigned8	–	–	–	x
BO: Unsigned16	–	–	–	x
BO: Integer16	–	–	–	x
BO: Unsigned32	–	–	–	x
BO: Integer32	–	–	–	x
BO: FloatingPoint32	–	–	–	–
Legend: x: BICO interconnection permitted –: BICO interconnection not permitted				
1 Exception: BICO input parameters with data type "Unsigned32/FloatingPoint32" can also be interconnected with the following BICO output parameters although these are not of the "FloatingPoint32" data type: CO: r8850, CO: r8860, CO: r2050, CO: r2060				

Dynamic index

This information is not relevant to the "Free blocks" function.

The "Free blocks" function does not support data sets.

Function diagram

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

Example:

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

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

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

Note:

Parameter p0004 is CU specific (belongs to Control Unit).

"Unit", "Unit group", and "Unit selection"

This information is not relevant to the "Free blocks" function.

The "Free blocks" function does not support "Unit group" or "Unit selection".

Parameter values

Min	Minimum value of the parameter [unit]
Max	Maximum value of the parameter [unit]
Factory setting	Shipped value (default) [unit]
	A different value may be displayed for certain parameters (e.g.p1800) at the initial commissioning stage. Reason: The setting of these parameters is determined by the operating environment of the Control Unit (e.g.depending on converter type, macro, Power Module).

Note:

For SINAMICS G150/G130/S150, the macros and their settings are provided in the following documentation:

References: /BAx/ x = 1, 2, 3
SINAMICS G150/G130/S150 Operating Instructions

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 setting parameters:

- Min, Max:

The setting range and unit apply to all indices.

- Factory setting:

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

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

Bit field

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

- Bit number and signal name
- Meaning with signal states 0 and 1
- Function diagram (optional)

The signal is shown on this function diagram.

Dependency

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

See also: List of other relevant parameters.

Safety information

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

Information that must be observed to avoid any problems.

Information that the user or operator may find useful.

DANGER



The description of this safety-related information can be found at the beginning of this manual (see **Safety information**).

WARNING



The description of this safety-related information can be found at the beginning of this manual (see **Safety information**).

CAUTION



The description of this safety-related information can be found at the beginning of this manual (see **Safety information**).

CAUTION

The description of this safety-related information can be found at the beginning of this manual (see **Safety information**).

NOTICE

The description of this safety-related information can be found at the beginning of this manual (see **Safety information**).

Note

Information that the user or operator may find useful.

2.2 List of parameters

Product: SINAMICS FBLOCKS, Version: 4101500, Language: eng
Objects: General OA obj.

p20000[0...9] Run-time group property / RTG property			
SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: -
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 9003	Factory setting 0
Description:	<p>Allocates properties to run-time groups 0 to 9.</p> <p>This property comprises the sampling time and for p20000[x] = 9003, the instant of the call within the sampling time.</p> <p>The index x of p20000 corresponds to the number of the run-time group:</p> <p>p20000[0] is used to set the property of the run-time group 0</p> <p>...</p> <p>p20000[9] is used to set the property of the run-time group 9</p> <p>p20000[x] = 0 Run-time group is not calculated.</p> <p>p20000[x] = 1 Free run-time group $T_{\text{sample}} = 1 * r20002$ 1)</p> <p>p20000[x] = 2 Free run-time group $T_{\text{sample}} = 2 * r20002$ 1)</p> <p>p20000[x] = 3 Free run-time group $T_{\text{sample}} = 3 * r20002$ 1)</p> <p>p20000[x] = 4 Free run-time group $T_{\text{sample}} = 4 * r20002$ 1)</p> <p>...</p> <p>p20000[x] = 255 Free run-time group $T_{\text{sample}} = 255 * r20002$ 1)</p> <p>p20000[x] = 256 Free run-time group $T_{\text{sample}} = 256 * r20002$ 1)</p> <p>p20000[x] = 1001 Free run-time group $T_{\text{sample}} = 1 * r20003$</p> <p>p20000[x] = 1002 Free run-time group $T_{\text{sample}} = 2 * r20003$</p> <p>p20000[x] = 1003 Free run-time group $T_{\text{sample}} = 3 * r20003$</p> <p>p20000[x] = 1004 Free run-time group $T_{\text{sample}} = 4 * r20003$</p> <p>p20000[x] = 1005 Free run-time group $T_{\text{sample}} = 5 * r20003$</p> <p>p20000[x] = 1006 Free run-time group $T_{\text{sample}} = 6 * r20003$</p> <p>p20000[x] = 1008 Free run-time group $T_{\text{sample}} = 8 * r20003$</p> <p>p20000[x] = 1010 Free run-time group $T_{\text{sample}} = 10 * r20003$</p> <p>p20000[x] = 1012 Free run-time group $T_{\text{sample}} = 12 * r20003$</p> <p>p20000[x] = 1016 Free run-time group $T_{\text{sample}} = 16 * r20003$</p> <p>p20000[x] = 1020 Free run-time group $T_{\text{sample}} = 20 * r20003$</p> <p>p20000[x] = 1024 Free run-time group $T_{\text{sample}} = 24 * r20003$</p> <p>p20000[x] = 1032 Free run-time group $T_{\text{sample}} = 32 * r20003$</p> <p>p20000[x] = 1040 Free run-time group $T_{\text{sample}} = 40 * r20003$</p> <p>p20000[x] = 1048 Free run-time group $T_{\text{sample}} = 48 * r20003$</p> <p>p20000[x] = 1064 Free run-time group $T_{\text{sample}} = 64 * r20003$</p> <p>p20000[x] = 1096 Free run-time group $T_{\text{sample}} = 96 * r20003$</p> <p>p20000[x] = 9003 Fixed run-time group "calculate before setpoint channel" (only VECTOR, SERVO) 2)</p>		
Value:	<p>0: Do not calculate</p> <p>1: Sampling time $1 * r20002$</p> <p>2: Sampling time $2 * r20002$</p> <p>3: Sampling time $3 * r20002$</p> <p>4: Sampling time $4 * r20002$</p> <p>5: Sampling time $5 * r20002$</p> <p>6: Sampling time $6 * r20002$</p> <p>7: Sampling time $7 * r20002$</p> <p>8: Sampling time $8 * r20002$</p> <p>9: Sampling time $9 * r20002$</p>		

List of parameters

10:	Sampling time 10 * r20002
11:	Sampling time 11 * r20002
12:	Sampling time 12 * r20002
13:	Sampling time 13 * r20002
14:	Sampling time 14 * r20002
15:	Sampling time 15 * r20002
16:	Sampling time 16 * r20002
17:	Sampling time 17 * r20002
18:	Sampling time 18 * r20002
19:	Sampling time 19 * r20002
20:	Sampling time 20 * r20002
21:	Sampling time 21 * r20002
22:	Sampling time 22 * r20002
23:	Sampling time 23 * r20002
24:	Sampling time 24 * r20002
25:	Sampling time 25 * r20002
26:	Sampling time 26 * r20002
27:	Sampling time 27 * r20002
28:	Sampling time 28 * r20002
29:	Sampling time 29 * r20002
30:	Sampling time 30 * r20002
31:	Sampling time 31 * r20002
32:	Sampling time 32 * r20002
33:	Sampling time 33 * r20002
34:	Sampling time 34 * r20002
35:	Sampling time 35 * r20002
36:	Sampling time 36 * r20002
37:	Sampling time 37 * r20002
38:	Sampling time 38 * r20002
39:	Sampling time 39 * r20002
40:	Sampling time 40 * r20002
41:	Sampling time 41 * r20002
42:	Sampling time 42 * r20002
43:	Sampling time 43 * r20002
44:	Sampling time 44 * r20002
45:	Sampling time 45 * r20002
46:	Sampling time 46 * r20002
47:	Sampling time 47 * r20002
48:	Sampling time 48 * r20002
49:	Sampling time 49 * r20002
50:	Sampling time 50 * r20002
51:	Sampling time 51 * r20002
52:	Sampling time 52 * r20002
53:	Sampling time 53 * r20002
54:	Sampling time 54 * r20002
55:	Sampling time 55 * r20002
56:	Sampling time 56 * r20002
57:	Sampling time 57 * r20002
58:	Sampling time 58 * r20002
59:	Sampling time 59 * r20002
60:	Sampling time 60 * r20002
61:	Sampling time 61 * r20002
62:	Sampling time 62 * r20002
63:	Sampling time 63 * r20002
64:	Sampling time 64 * r20002
65:	Sampling time 65 * r20002
66:	Sampling time 66 * r20002
67:	Sampling time 67 * r20002
68:	Sampling time 68 * r20002
69:	Sampling time 69 * r20002
70:	Sampling time 70 * r20002
71:	Sampling time 71 * r20002
72:	Sampling time 72 * r20002
73:	Sampling time 73 * r20002

74: Sampling time 74 * r20002
75: Sampling time 75 * r20002
76: Sampling time 76 * r20002
77: Sampling time 77 * r20002
78: Sampling time 78 * r20002
79: Sampling time 79 * r20002
80: Sampling time 80 * r20002
81: Sampling time 81 * r20002
82: Sampling time 82 * r20002
83: Sampling time 83 * r20002
84: Sampling time 84 * r20002
85: Sampling time 85 * r20002
86: Sampling time 86 * r20002
87: Sampling time 87 * r20002
88: Sampling time 88 * r20002
89: Sampling time 89 * r20002
90: Sampling time 90 * r20002
91: Sampling time 91 * r20002
92: Sampling time 92 * r20002
93: Sampling time 93 * r20002
94: Sampling time 94 * r20002
95: Sampling time 95 * r20002
96: Sampling time 96 * r20002
97: Sampling time 97 * r20002
98: Sampling time 98 * r20002
99: Sampling time 99 * r20002
100: Sampling time 100 * r20002
101: Sampling time 101 * r20002
102: Sampling time 102 * r20002
103: Sampling time 103 * r20002
104: Sampling time 104 * r20002
105: Sampling time 105 * r20002
106: Sampling time 106 * r20002
107: Sampling time 107 * r20002
108: Sampling time 108 * r20002
109: Sampling time 109 * r20002
110: Sampling time 110 * r20002
111: Sampling time 111 * r20002
112: Sampling time 112 * r20002
113: Sampling time 113 * r20002
114: Sampling time 114 * r20002
115: Sampling time 115 * r20002
116: Sampling time 116 * r20002
117: Sampling time 117 * r20002
118: Sampling time 118 * r20002
119: Sampling time 119 * r20002
120: Sampling time 120 * r20002
121: Sampling time 121 * r20002
122: Sampling time 122 * r20002
123: Sampling time 123 * r20002
124: Sampling time 124 * r20002
125: Sampling time 125 * r20002
126: Sampling time 126 * r20002
127: Sampling time 127 * r20002
128: Sampling time 128 * r20002
129: Sampling time 129 * r20002
130: Sampling time 130 * r20002
131: Sampling time 131 * r20002
132: Sampling time 132 * r20002
133: Sampling time 133 * r20002
134: Sampling time 134 * r20002
135: Sampling time 135 * r20002
136: Sampling time 136 * r20002
137: Sampling time 137 * r20002

List of parameters

138: Sampling time 138 * r20002
139: Sampling time 139 * r20002
140: Sampling time 140 * r20002
141: Sampling time 141 * r20002
142: Sampling time 142 * r20002
143: Sampling time 143 * r20002
144: Sampling time 144 * r20002
145: Sampling time 145 * r20002
146: Sampling time 146 * r20002
147: Sampling time 147 * r20002
148: Sampling time 148 * r20002
149: Sampling time 149 * r20002
150: Sampling time 150 * r20002
151: Sampling time 151 * r20002
152: Sampling time 152 * r20002
153: Sampling time 153 * r20002
154: Sampling time 154 * r20002
155: Sampling time 155 * r20002
156: Sampling time 156 * r20002
157: Sampling time 157 * r20002
158: Sampling time 158 * r20002
159: Sampling time 159 * r20002
160: Sampling time 160 * r20002
161: Sampling time 161 * r20002
162: Sampling time 162 * r20002
163: Sampling time 163 * r20002
164: Sampling time 164 * r20002
165: Sampling time 165 * r20002
166: Sampling time 166 * r20002
167: Sampling time 167 * r20002
168: Sampling time 168 * r20002
169: Sampling time 169 * r20002
170: Sampling time 170 * r20002
171: Sampling time 171 * r20002
172: Sampling time 172 * r20002
173: Sampling time 173 * r20002
174: Sampling time 174 * r20002
175: Sampling time 175 * r20002
176: Sampling time 176 * r20002
177: Sampling time 177 * r20002
178: Sampling time 178 * r20002
179: Sampling time 179 * r20002
180: Sampling time 180 * r20002
181: Sampling time 181 * r20002
182: Sampling time 182 * r20002
183: Sampling time 183 * r20002
184: Sampling time 184 * r20002
185: Sampling time 185 * r20002
186: Sampling time 186 * r20002
187: Sampling time 187 * r20002
188: Sampling time 188 * r20002
189: Sampling time 189 * r20002
190: Sampling time 190 * r20002
191: Sampling time 191 * r20002
192: Sampling time 192 * r20002
193: Sampling time 193 * r20002
194: Sampling time 194 * r20002
195: Sampling time 195 * r20002
196: Sampling time 196 * r20002
197: Sampling time 197 * r20002
198: Sampling time 198 * r20002
199: Sampling time 199 * r20002
200: Sampling time 200 * r20002
201: Sampling time 201 * r20002

202: Sampling time 202 * r20002
203: Sampling time 203 * r20002
204: Sampling time 204 * r20002
205: Sampling time 205 * r20002
206: Sampling time 206 * r20002
207: Sampling time 207 * r20002
208: Sampling time 208 * r20002
209: Sampling time 209 * r20002
210: Sampling time 210 * r20002
211: Sampling time 211 * r20002
212: Sampling time 212 * r20002
213: Sampling time 213 * r20002
214: Sampling time 214 * r20002
215: Sampling time 215 * r20002
216: Sampling time 216 * r20002
217: Sampling time 217 * r20002
218: Sampling time 218 * r20002
219: Sampling time 219 * r20002
220: Sampling time 220 * r20002
221: Sampling time 221 * r20002
222: Sampling time 222 * r20002
223: Sampling time 223 * r20002
224: Sampling time 224 * r20002
225: Sampling time 225 * r20002
226: Sampling time 226 * r20002
227: Sampling time 227 * r20002
228: Sampling time 228 * r20002
229: Sampling time 229 * r20002
230: Sampling time 230 * r20002
231: Sampling time 231 * r20002
232: Sampling time 232 * r20002
233: Sampling time 233 * r20002
234: Sampling time 234 * r20002
235: Sampling time 235 * r20002
236: Sampling time 236 * r20002
237: Sampling time 237 * r20002
238: Sampling time 238 * r20002
239: Sampling time 239 * r20002
240: Sampling time 240 * r20002
241: Sampling time 241 * r20002
242: Sampling time 242 * r20002
243: Sampling time 243 * r20002
244: Sampling time 244 * r20002
245: Sampling time 245 * r20002
246: Sampling time 246 * r20002
247: Sampling time 247 * r20002
248: Sampling time 248 * r20002
249: Sampling time 249 * r20002
250: Sampling time 250 * r20002
251: Sampling time 251 * r20002
252: Sampling time 252 * r20002
253: Sampling time 253 * r20002
254: Sampling time 254 * r20002
255: Sampling time 255 * r20002
256: Sampling time 256 * r20002
1001: Sampling time 1 * r20003
1002: Sampling time 2 * r20003
1003: Sampling time 3 * r20003
1004: Sampling time 4 * r20003
1005: Sampling time 5 * r20003
1006: Sampling time 6 * r20003
1008: Sampling time 8 * r20003
1010: Sampling time 10 * r20003
1012: Sampling time 12 * r20003

1016: Sampling time 16 * r20003
 1020: Sampling time 20 * r20003
 1024: Sampling time 24 * r20003
 1032: Sampling time 32 * r20003
 1040: Sampling time 40 * r20003
 1048: Sampling time 48 * r20003
 1064: Sampling time 64 * r20003
 1080: Sampling time 80 * r20003
 1096: Sampling time 96 * r20003
 9003: Before setp chann

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

Dependency: r7903, r20008

Caution: The assignment of the properties of the run-time groups should not be changed on drives in operation as this could result in discontinuous signal transitions depending on the blocks used. At the 1st arithmetic cycle after the change the respective internal initialization value is present at the block connections and in each subsequent cycle the calculated value is then present.

Note: Re 1) in the description:

This selection value can only be selected if, for sampling time T_{sample} of this run-time group, the following applies: $1 \text{ ms} \leq T_{\text{sample}} \leq r20003$.

Re 2) in the description:

The fixed run-time groups $p20000[x] = 9003$ log on with the sampling time of the setpoint channel, however, as a minimum with a sampling time of 1 ms. If, as a result of this limit, the actual sampling time deviates from the sampling time of the setpoint channel $p0115[3]$, then Alarm A20103 is output. Another run-time group with a sampling time $\geq 1 \text{ ms}$ should be selected. "Calculate before setpoint channel" means, before calculating function charts 3010, 3020, 3030, 3040 and following, if the setpoint channel is activated (bit 8 of $p0108 == p0108.8 = 1$). If, e.g. for SERVO, a setpoint channel has not been configured ($p0108.8 = 0$), then the calculation is made before function chart 3095.

r20001[0...9] Run-time group sampling time / RTG sampling time

SERVO_S110
 (FBL)SERVO_S110
 (FBL)

Can be changed: -

Data type: FloatingPoint32

P-Group: -

Not for motor type: -

Min
 - [ms]

Calculated: -

Dynamic index: -

Units group: -

Max
 - [ms]

Access level: 1

Func. diagram: -

Unit selection: -

Expert list: 1

Factory setting
 - [ms]

Description: Displays the current sampling time of the run-time group 0 to 9.

Index:
 [0] = Run-time group 0
 [1] = Run-time group 1
 [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

r20002 Basis sampling time, hardware / Basis samp time HW

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: -
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min - [ms]	Max - [ms]	Factory setting - [ms]
Description:	Displays the lowest sampling time effective at this drive object for values 1 to 256 of p20000. $T_{\text{sample}} = p20000 * r20002$		

r20003 Basis sampling time, software / Basis samp time SW

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: -
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min - [ms]	Max - [ms]	Factory setting - [ms]
Description:	Displays the sampling time as factor effective on this drive object for values 1001 to 1096 of p20000. $T_{\text{sample}} = (p20000 - 1000) * r20003$		

r20008[0...12] Hardware sampling times available / HW t_samp

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 3
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: -
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min - [ms]	Max - [ms]	Factory setting - [ms]
Description:	Displays the assignment of the available hardware sampling times of the drive unit. The term "hardware sampling times" refers to those sampling times that are formed as a multiple of the basic sampling time hardware sampling times r20002 and are always < r20003.		
Dependency:	r7903, p20000		
Notice:	For internal purposes, the drive unit always requires at least two (or several, depending on the parameterization of p0115[]) of the drive objects) free hardware sampling times. Therefore the current number of hardware sampling times that are still free can be read out in r7903. If r7903=0, no additional sampling time that differs from r20008[0... 12] can be provided from the Control Unit. When selecting in this state, if you wish to select a run-time group in p20000 with a sampling time < r20003 (p20000 <= 255), then only run-time groups can be selected whose sampling time is already provided in r20008[0... 12].		
Note:	The 13 different sampling times available are displayed in r20008[0...12]. If the value of r20008[0...12] != 0 (not equal to 0), then it specifies the sampling time in ms. A sampling time that is provided can be simultaneously used by system functions, several FBLOCKS run-time groups and several DCC run-time groups. If the value of r20008[0...12] = 0, then this sampling time can still be freely assigned. It should be noted that the basic system, depending on the selected basic sampling times p0115[0], requires at least two (sometimes several) freely assignable hardware sampling times for internal functions. The number of hardware sampling times that can still be freely assigned can be read out in r7903. r20008[11] = 99999.00000 --> Hardware sampling time is not supported. r20008[12] = 99999.00000 --> Hardware sampling time is not supported. The sampling time of run-time groups that have been assigned to the PROFIBUS run-time groups (p20000 = 4000,... 4004) is not displayed in r20008. For this sampling time one of the internally permanently assigned HW sampling times is used.		

p20030[0...3] BI: AND 0 inputs / AND 0 inputs

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7210
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7210
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / AND 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7210
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which the instance AND 0 of the AND function block should be called.		
Value:	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 9999: Do not calculate		

p20033 AND 0 run sequence / AND 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7210
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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			
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned32 / Binary P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7210 Unit selection: - Expert list: 1 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			
SERVO_S110 (FBL)	Can be changed: - Data type: Unsigned32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7210 Unit selection: - Expert list: 1 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 RTG / AND 1 RTG			
SERVO_S110 (FBL)	Can be changed: T Data type: Integer16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 9999	Access level: 1 Func. diagram: 7210 Unit selection: - Expert list: 1 Factory setting 9999
Description:	Setting parameter for the run-time group in which the instance AND 1 of the AND function block should be called.		
Value:	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 9999: Do not calculate		
p20037 AND 1 run sequence / AND 1 RunSeq			
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 32000	Access level: 1 Func. diagram: 7210 Unit selection: - Expert list: 1 Factory setting 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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7210
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7210
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / AND 2 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7210
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which the instance AND 2 of the AND function block should be called.		
Value:	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 9999: Do not calculate		

p20041 AND 2 run sequence / AND 2 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 2710
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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			
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned32 / Binary P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7210 Unit selection: - Expert list: 1 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			
SERVO_S110 (FBL)	Can be changed: - Data type: Unsigned32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7210 Unit selection: - Expert list: 1 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 RTG / AND 3 RTG			
SERVO_S110 (FBL)	Can be changed: T Data type: Integer16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 9999	Access level: 1 Func. diagram: 7210 Unit selection: - Expert list: 1 Factory setting 9999
Description:	Setting parameter for the run-time group in which the instance AND 3 of the AND function block should be called.		
Value:	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 9999: Do not calculate		
p20045 AND 3 run sequence / AND 3 RunSeq			
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 32000	Access level: 1 Func. diagram: 7210 Unit selection: - Expert list: 1 Factory setting 40
Description:	Setting parameter for the run sequence of instance AND 3 within the run-time group set in p20044.		
Note:	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

p20046[0...3] BI: OR 0 inputs / OR 0 inputs

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / OR 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which the instance OR 0 of the OR function block should be called.		
Value:	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 9999: Do not calculate		

p20049 OR 0 run sequence / OR 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / OR 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which the instance OR 1 of the OR function block should be called.		
Value:	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 9999: Do not calculate		

p20053 OR 1 run sequence / OR 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / OR 2 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which the instance OR 2 of the OR function block should be called.		
Value:	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 9999: Do not calculate		

p20057 OR 2 run sequence / OR 2 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / OR 3 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which the instance OR 3 of the OR function block should be called.		
Value:	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 9999: Do not calculate		

p20061 OR 3 run sequence / OR 3 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7212
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7214
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7214
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-
Description:	Display parameter for binary quantity Q of instance XOR 0 of the XOR function block.		

p20064 XOR 0 RTG / XOR 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7214
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which the instance XOR 0 of the XOR function block should be called.		
Value:	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 9999: Do not calculate		

p20065 XOR 0 run sequence / XOR 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7214
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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		
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned32 / Binary P-Group: - Not for motor type: -	Calculated: - Dynamic index: - Units group: -	Access level: 1 Func. diagram: 7214 Unit selection: - Expert list: 1
	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		
SERVO_S110 (FBL)	Can be changed: - Data type: Unsigned32 P-Group: - Not for motor type: -	Calculated: - Dynamic index: - Units group: -	Access level: 1 Func. diagram: 7214 Unit selection: - Expert list: 1
	Min	Max	Factory setting
	-	-	-
Description:	Display parameter for binary quantity Q of instance XOR 1 of the XOR function block.		
p20068	XOR 1 RTG / XOR 1 RTG		
SERVO_S110 (FBL)	Can be changed: T Data type: Integer16 P-Group: - Not for motor type: -	Calculated: - Dynamic index: - Units group: -	Access level: 1 Func. diagram: 7214 Unit selection: - Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which the instance XOR 1 of the XOR function block should be called.		
Value:	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 9999: Do not calculate		
p20069	XOR 1 run sequence / XOR 1 RunSeq		
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned16 P-Group: - Not for motor type: -	Calculated: - Dynamic index: - Units group: -	Access level: 1 Func. diagram: 7214 Unit selection: - Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7214
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7214
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-
Description:	Display parameter for binary quantity Q of instance XOR 2 of the XOR function block.		

p20072 XOR 2 RTG / XOR 2 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7214
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which the instance XOR 2 of the XOR function block should be called.		
Value:	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 9999: Do not calculate		

p20073 XOR 2 run sequence / XOR 2 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7214
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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			
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned32 / Binary P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7214 Unit selection: - Expert list: 1 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		
<hr/>			
r20075 BO: XOR 3 output Q / XOR 3 output Q			
SERVO_S110 (FBL)	Can be changed: - Data type: Unsigned32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7214 Unit selection: - Expert list: 1 Factory setting -
Description:	Display parameter for binary quantity Q of instance XOR 3 of the XOR function block.		
<hr/>			
p20076 XOR 3 RTG / XOR 3 RTG			
SERVO_S110 (FBL)	Can be changed: T Data type: Integer16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 9999	Access level: 1 Func. diagram: 7214 Unit selection: - Expert list: 1 Factory setting 9999
Description:	Setting parameter for the run-time group in which the instance XOR 3 of the XOR function block should be called.		
Value:	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 9999: Do not calculate		
<hr/>			
p20077 XOR 3 run sequence / XOR 3 RunSeq			
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 32000	Access level: 1 Func. diagram: 7214 Unit selection: - Expert list: 1 Factory setting 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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-

Description: Display parameter for the inverted output of instance NOT 0 of the inverter.

p20080 NOT 0 RTG / NOT 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 0 of the inverter should be called.

Value:

- 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
- 9999: Do not calculate

p20081 NOT 0 run sequence / NOT 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-

Description: Display parameter for the inverted output of instance NOT 1 of the inverter.

p20084 NOT 1 RTG / NOT 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 1 of the inverter should be called.

Value:

- 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
- 9999: Do not calculate

p20085 NOT 1 run sequence / NOT 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-

Description: Display parameter for the inverted output of instance NOT 2 of the inverter.

p20088 NOT 2 RTG / NOT 2 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which the instance NOT 2 of the inverter should be called.

Value:

- 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
- 9999: Do not calculate

p20089 NOT 2 run sequence / NOT 2 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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		
SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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		
SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-
Description:	Display parameter for the inverted output of instance NOT 3 of the inverter.		

p20092	NOT 3 RTG / NOT 3 RTG		
SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which the instance NOT 3 of the inverter should be called.		
Value:	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 9999: Do not calculate		

p20093	NOT 3 run sequence / NOT 3 RunSeq		
SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7216
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / ADD 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which the instance ADD 0 of the adder should be called.		
Value:	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 9999: Do not calculate		

p20097 ADD 0 run sequence / ADD 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / ADD 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which the instance ADD 1 of the adder should be called.		
Value:	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 9999: Do not calculate		

p20101 ADD 1 run sequence / ADD 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-
Description:	Display parameter for the difference Y = X1-X2 of instance SUB 0 of the subtracter.		

p20104 SUB 0 RTG / SUB 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which instance SUB 0 of the subtracter should be called.		
Value:	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 9999: Do not calculate		

p20105 SUB 0 run sequence / SUB 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-
Description:	Display parameter for the difference Y = X1-X2 of instance SUB 1 of the subtracter.		

p20108 SUB 1 RTG / SUB 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which instance SUB 1 of the subtracter should be called.		
Value:	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 9999: Do not calculate		

p20109 SUB 1 run sequence / SUB 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7220
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / MUL 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which instance MUL 0 of the multiplier should be called.		
Value:	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 9999: Do not calculate		

p20113 MUL 0 run sequence / MUL 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / MUL 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which instance MUL 1 of the multiplier should be called.		
Value:	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 9999: Do not calculate		

p20117 MUL 1 run sequence / MUL 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 X1 [1] = Divisor X2		

r20119[0...2] CO: DIV 0 quotient / DIV 0 quotient

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-
Description:	Display parameter for the quotients $Y = X1 / X2$, the integer number quotients YIN and for the division remainder MOD 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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-
Description:	Display parameter for the signal QF that the divisor X2 of instance DIV 0 of the divider is zero. $X2 = 0.0 \Rightarrow QF = 1$		

p20121 DIV 0 RTG / DIV 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which instance DIV 0 of the divider should be called.		
Value:	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 9999: Do not calculate		

p20122 DIV 0 run sequence / DIV 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 32000	Factory setting 300
Description:	Setting parameter for the run sequence of instance DIV 0 within the run-time group set in p20121.		
Note:	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

p20123[0...1] CI: DIV 1 inputs / DIV 1 inputs

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 X1 [1] = Divisor X2		

r20124[0...2] CO: DIV 1 quotient / DIV 1 quotient

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting -
Description:	Display parameter for the quotients $Y = X1 / X2$, the integer number quotients YIN and for the division remainder MOD 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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting -
Description:	Display parameter for the signal QF that the divisor X2 of instance DIV 1 of the divider is zero. $X2 = 0.0 \Rightarrow QF = 1$		

p20126 DIV 1 RTG / DIV 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 9999	Factory setting 9999

Description: Setting parameter for the run-time group in which instance DIV 1 of the divider should be called.

Value:

- 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
- 9999: Do not calculate

p20127 DIV 1 run sequence / DIV 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7222
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 32000	Factory setting 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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7224
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7224
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7224
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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.
 $X < 0.0 \Rightarrow SN = 1$

p20131 AVA 0 RTG / AVA 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7224
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which instance AVA 0 of the absolute value generator with sign evaluation should be called.

Value:

- 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
- 9999: Do not calculate

p20132 AVA 0 run sequence / AVA 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7224
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7224
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7224
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7224
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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.
 $X < 0.0 \Rightarrow SN = 1$

p20136 AVA 1 RTG / AVA 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7224
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which instance AVA 1 of the absolute value generator with sign evaluation should be called.

Value:

- 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
- 9999: Do not calculate

p20137 AVA 1 run sequence / AVA 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7224
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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		
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned32 / Binary P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7230 Unit selection: - Expert list: 1 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		
SERVO_S110 (FBL)	Can be changed: T Data type: FloatingPoint32 P-Group: - Not for motor type: - Min 0.00	Calculated: - Dynamic index: - Units group: - Max 60000.00	Access level: 1 Func. diagram: 7230 Unit selection: - Expert list: 1 Factory setting 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		
SERVO_S110 (FBL)	Can be changed: - Data type: Unsigned32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7230 Unit selection: - Expert list: 1 Factory setting -
Description:	Display parameter for output pulse Q of instance MFP 0 of the pulse generator.		
p20141	MFP 0 RTG / MFP 0 RTG		
SERVO_S110 (FBL)	Can be changed: T Data type: Integer16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 9999	Access level: 1 Func. diagram: 7230 Unit selection: - Expert list: 1 Factory setting 9999
Description:	Setting parameter for the run-time group in which the instance MFP 0 of the pulse generator should be called.		
Value:	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 9999: Do not calculate		

p20142 MFP 0 run sequence / MFP 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7230
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 32000	Factory setting 370
Description:	Setting parameter for the run sequence of instance MFP 0 within the run-time group set in p20141.		
Note:	The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.		

p20143 BI: MFP 1 input pulse I / MFP 1 inp_pulse I

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7230
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7230
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0.00	Max 60000.00	Factory setting 0.00
Description:	Setting parameter for pulse duration T in milliseconds of instance MFP 1 of the pulse generator.		

r20145 BO: MFP 1 output Q / MFP 1 output Q

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7230
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting -
Description:	Display parameter for output pulse Q of instance MFP 1 of the pulse generator.		

p20146 MFP 1 RTG. / MFP 1 RTG.

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7230
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 9999	Factory setting 9999
Description:	Setting parameter for the run-time group in which the instance MFP 1 of the pulse generator should be called.		
Value:	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
 9999: Do not calculate

p20147 MFP 1 run sequence / MFP 1 RunSeq

SERVO_S110 (FBL) **Can be changed:** T **Calculated:** - **Access level:** 1
Data type: Unsigned16 **Dynamic index:** - **Func. diagram:** 7230
P-Group: - **Units group:** - **Unit selection:** -
Not for motor type: - **Expert list:** 1

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

SERVO_S110 (FBL) **Can be changed:** T **Calculated:** - **Access level:** 1
Data type: Unsigned32 / Binary **Dynamic index:** - **Func. diagram:** 7230
P-Group: - **Units group:** - **Unit selection:** -
Not for motor type: - **Expert list:** 1

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

SERVO_S110 (FBL) **Can be changed:** T **Calculated:** - **Access level:** 1
Data type: FloatingPoint32 **Dynamic index:** - **Func. diagram:** 7230
P-Group: - **Units group:** - **Unit selection:** -
Not for motor type: - **Expert list:** 1

Min **Max** **Factory setting**
 0.00 60000.00 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

SERVO_S110 (FBL) **Can be changed:** - **Calculated:** - **Access level:** 1
Data type: Unsigned32 **Dynamic index:** - **Func. diagram:** 7230
P-Group: - **Units group:** - **Unit selection:** -
Not for motor type: - **Expert list:** 1

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

Description: Display parameter for output pulse Q of instance PCL 0 of the pulse shortener.

p20151 PCL 0 RTG / PCL 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7230
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 9999	Factory setting 9999
Description:	Setting parameter for the run-time group in which the instance PCL 0 of the pulse shortener should be called.		
Value:	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 9999: Do not calculate		

p20152 PCL 0 run sequence / PCL 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7230
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 32000	Factory setting 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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7230
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7230
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0.00	Max 60000.00	Factory setting 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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7230
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-

Description: Display parameter for output pulse Q of instance PCL 1 of the pulse shortener.

p20156 PCL 1 RTG / PCL 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7230
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which the instance PCL 1 of the pulse shortener should be called.

Value:

- 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
- 9999: Do not calculate

p20157 PCL 1 run sequence / PCL 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7230
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7232
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	0

Description: Sets the signal source for the input pulse I of instance PDE 0 of the switch-in delay element.

p20159	PDE 0 pulse delay time in ms / PDE 0 t_del ms		
SERVO_S110 (FBL)	Can be changed: T Data type: FloatingPoint32 P-Group: - Not for motor type: - Min 0.00	Calculated: - Dynamic index: - Units group: - Max 60000.00	Access level: 1 Func. diagram: 7232 Unit selection: - Expert list: 1 Factory setting 0.00
Description:	Setting parameter for pulse delay time T in milliseconds of instance PDE 0 of the switch-in delay element.		
r20160	BO: PDE 0 output Q / PDE 0 output Q		
SERVO_S110 (FBL)	Can be changed: - Data type: Unsigned32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7232 Unit selection: - Expert list: 1 Factory setting -
Description:	Display parameter for output pulse Q of instance PDE 0 of the switch-in delay element.		
p20161	PDE 0 RTG / PDE 0 RTG		
SERVO_S110 (FBL)	Can be changed: T Data type: Integer16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 9999	Access level: 1 Func. diagram: 7232 Unit selection: - Expert list: 1 Factory setting 9999
Description:	Setting parameter for the run-time group in which instance PDE 0 of the switch-in delay element should be called.		
Value:	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 9999: Do not calculate		
p20162	PDE 0 run sequence / PDE 0 RunSeq		
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 32000	Access level: 1 Func. diagram: 7232 Unit selection: - Expert list: 1 Factory setting 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		
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned32 / Binary P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7232 Unit selection: - Expert list: 1 Factory setting 0
Description:	Sets the signal source for the input pulse I of instance PDE 1 of the switch-in delay element.		
p20164	PDE 1 pulse delay time in ms / PDE 1 t_del ms		
SERVO_S110 (FBL)	Can be changed: T Data type: FloatingPoint32 P-Group: - Not for motor type: - Min 0.00	Calculated: - Dynamic index: - Units group: - Max 60000.00	Access level: 1 Func. diagram: 7232 Unit selection: - Expert list: 1 Factory setting 0.00
Description:	Setting parameter for pulse delay time T in milliseconds of instance PDE 1 of the switch-in delay element.		
r20165	BO: PDE 1 output Q / PDE 1 output Q		
SERVO_S110 (FBL)	Can be changed: - Data type: Unsigned32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7232 Unit selection: - Expert list: 1 Factory setting -
Description:	Display parameter for output pulse Q of instance PDE 1 of the switch-in delay element.		
p20166	PDE 1 RTG / PDE 1 RTG		
SERVO_S110 (FBL)	Can be changed: T Data type: Integer16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 9999	Access level: 1 Func. diagram: 7232 Unit selection: - Expert list: 1 Factory setting 9999
Description:	Setting parameter for the run-time group in which instance PDE 1 of the switch-in delay element should be called.		
Value:	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 9999: Do not calculate		

p20167 PDE 1 run sequence / PDE 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7232
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 32000	Factory setting 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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7232
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting 0
Description:	Sets the signal source for the input pulse I of instance PDF 0 of the switch-out delay element.		

p20169 PDF 0 pulse extension time in ms / PDF 0 t_ext ms

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7232
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0.00	Max 60000.00	Factory setting 0.00
Description:	Setting parameter for pulse extension time T in milliseconds of instance PDF 0 of the switch-out delay element.		

r20170 BO: PDF 0 output Q / PDF 0 output Q

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7232
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting -
Description:	Display parameter for output pulse Q of instance PDF 0 of the switch-out delay element.		

p20171 PDF 0 RTG / PDF 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7232
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 9999	Factory setting 9999
Description:	Setting parameter for the run-time group in which the instance PDF 0 of the switch-out delay element should to be called.		
Value:	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
 9999: Do not calculate

p20172 PDF 0 run sequence / PDF 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7232
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 32000	Factory setting 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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7232
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting 0

Description: Sets the signal source for the input pulse I of instance PDF 1 of the switch-out delay element.

p20174 PDF 1 pulse extension time in ms / PDF 1 t_ext ms

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7232
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0.00	Max 60000.00	Factory setting 0.00

Description: Setting parameter for pulse extension time T in milliseconds of instance PDF 1 of the switch-out delay element.

r20175 BO: PDF 1 output Q / PDF 1 output Q

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7232
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting -

Description: Display parameter for output pulse Q of instance PDF 1 of the switch-out delay element.

p20176 PDF 1 RTG / PDF 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7232
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 9999	Factory setting 9999

Description: Setting parameter for the run-time group in which the instance PDF 1 of the switch-out delay element should to be called.

Value:

- 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
- 9999: Do not calculate

p20177 PDF 1 run sequence / PDF 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7232
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 32000	Factory setting 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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7234
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7234
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0.00	Max 60000.00	Factory setting 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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7234
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-

Description: Display parameter for the output pulse Q of instance PST 0 of the pulse extension element.

p20181 PST 0 RTG / PST 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7234
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which the instance PST 0 of the pulse extension element should be called.

Value:

- 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
- 9999: Do not calculate

p20182 PST 0 run sequence / PST 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7234
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7234
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7234
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0.00	Max 60000.00	Factory setting 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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7234
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting -

Description: Display parameter for output pulse Q of instance PST 1 of the pulse extension element.

p20186 PST 1 RTG / PST 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7234
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 9999	Factory setting 9999

Description: Setting parameter for the run-time group in which the instance PST 1 of the pulse extension element should be called.

Value:

- 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
- 9999: Do not calculate

p20187 PST 1 run sequence / PST 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7234
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 7999	Factory setting 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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-
Description:	Display parameter for inverted output QN of instance RSR 0 of the RS flipflop.		

p20191 RSR 0 RTG / RSR 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which instance RSR 0 of the RS flipflop should be called.		
Value:	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 9999: Do not calculate		

p20192 RSR 0 run sequence / RSR 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 7999	Factory setting 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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting -
Description:	Display parameter for output 0 of instance RSR 1 of the RS flipflop.		

r20195 BO: RSR 1 inverted output QN / RSR 1 inv outp QN

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting -
Description:	Display parameter for inverted output QN of instance RSR 1 of the RS flipflop.		

p20196 RSR 1 RTG / RSR 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 9999	Factory setting 9999
Description:	Setting parameter for the run-time group in which instance RSR 1 of the RS flipflop should be called.		
Value:	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
 9999: Do not calculate

p20197 RSR 1 run sequence / RSR 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 7999	Factory setting 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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting 0

Description: Sets the signal source of trigger input I, of D input D, of set input S and reset input R of instance DFR 0 of the D flip-flop.

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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting -

Description: Display parameter for the inverted output QN of instance DFR 0 of the D flipflop.

p20201 DFR 0 RTG / DFR 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 9999	Factory setting 9999

Description: Setting parameter for the run-time group in which instance DFR 0 of the D flipflop should be called.

Value:

- 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
- 9999: Do not calculate

p20202 DFR 0 run sequence / DFR 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 32000	Factory setting 550

Description: Setting parameter for the run sequence of instance DFR 0 within the run-time group set in p20201.

Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20203[0...3] BI: DFR 1 inputs / DFR 1 inputs

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting 0

Description: Sets the signal source of trigger input I, of D input D, of set input S and reset input R of instance DFR 1 of the D flip-flop.

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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-

Description: Display parameter for the inverted output QN of instance DFR 1 of the D flipflop.

p20206 DFR 1 RTG / DFR 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which instance DFR 1 of the D flipflop should be called.

Value:

- 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
- 9999: Do not calculate

p20207 DFR 1 run sequence / DFR 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7240
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-

Description: Display parameter for output quantity Q of instance BSW 0 of the binary changeover switch.

p20211 BSW 0 RTG / BSW 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which the instance BSW 0 of the binary changeover switch should be called.

Value:

- 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
- 9999: Do not calculate

p20212 BSW 0 run sequence / BSW 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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		
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned32 / Binary P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7250 Unit selection: - Expert list: 1 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		
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned32 / Binary P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7250 Unit selection: - Expert list: 1 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		
SERVO_S110 (FBL)	Can be changed: - Data type: Unsigned32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7250 Unit selection: - Expert list: 1 Factory setting -
Description:	Display parameter for output quantity Q of instance BSW 1 of the binary changeover switch.		
p20216	BSW 1 RTG / BSW 1 RTG		
SERVO_S110 (FBL)	Can be changed: T Data type: Integer16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 9999	Access level: 1 Func. diagram: 7250 Unit selection: - Expert list: 1 Factory setting 9999
Description:	Setting parameter for the run-time group in which the instance BSW 1 of the binary changeover switch should be called.		
Value:	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 9999: Do not calculate		

p20217 BSW 1 run sequence / BSW 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 7999	Factory setting 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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -	Max -	Factory setting -

Description: Display parameter for output quantity Y of instance NSW 0 of the numeric changeover switch.

p20221 NSW 0 RTG / NSW 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 9999	Factory setting 9999

Description: Setting parameter for the run-time group in which the instance NSW 0 of the numeric changeover switch should be called.

Value:	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
	9999:	Do not calculate

p20222 NSW 0 run sequence / NSW 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-
Description:	Display parameter for output quantity Y of instance NSW 1 of the numeric changeover switch.		

p20226 NSW 1 RTG / NSW 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1

Min	Max	Factory setting
0	9999	9999

Description: Setting parameter for the run-time group in which the instance NSW 1 of the numeric changeover switch should be called.

Value:

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
9999:	Do not calculate

p20227 NSW 1 run sequence / NSW 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7250
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1

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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1

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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1

Min	Max	Factory setting
-340.28235E36	340.28235E36	0.00

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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -340.28235E36	Max 340.28235E36	Factory setting 0.00

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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / LIM 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 9999	Factory setting 9999

Description: Setting parameter for the run-time group in which instance LIM 0 of the limiter should be called.

Value:

- 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
 9999: Do not calculate

p20235 LIM 0 run sequence / LIM 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 32000	Factory setting 640

Description: Setting parameter for the run sequence of instance LIM 0 within the run-time group set in p20234.
Note: The function blocks with a lower run sequence value are calculated before function blocks with a higher run sequence value.

p20236 CI: LIM 1 input X / LIM 1 input X

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -340.28235E36	Max 340.28235E36	Factory setting 0.00

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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min -340.28235E36	Max 340.28235E36	Factory setting 0.00

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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / LIM 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which instance LIM 1 of the limiter should be called.

Value:

- 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
- 9999: Do not calculate

p20243 LIM 1 run sequence / LIM 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7260
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7262
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / Binary	Dynamic index: -	Func. diagram: 7262
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7262
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7262
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-
Description:	Display parameter for the smoothed output quantity Y of instance PT1 0 of the smoothing element.		

p20248 PT1 0 RTG / PT1 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7262
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999
Description:	Setting parameter for the run-time group in which instance PT1 0 of the smoothing element should be called.		
Value:	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
9999: Do not calculate

p20249 PT1 0 run sequence / PT1 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 32000	Access level: 1 Func. diagram: 7262 Unit selection: - Expert list: 1 Factory setting 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

SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned32 / FloatingPoint32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7262 Unit selection: - Expert list: 1 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

SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned32 / Binary P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7262 Unit selection: - Expert list: 1 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

SERVO_S110 (FBL)	Can be changed: T Data type: FloatingPoint32 P-Group: - Not for motor type: - Min 0.00	Calculated: - Dynamic index: - Units group: - Max 340.28235E36	Access level: 1 Func. diagram: 7262 Unit selection: - Expert list: 1 Factory setting 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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7262
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-

Description: Display parameter for the smoothed output quantity Y of instance PT1 1 of the smoothing element.

p20254 PT1 1 RTG / PT1 1 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7262
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which instance PT1 1 of the smoothing element should be called.

Value:

- 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
- 9999: Do not calculate

p20255 PT1 1 run sequence / PT1 1 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7262
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7264
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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		
SERVO_S110 (FBL)	Can be changed: T Data type: FloatingPoint32 P-Group: - Not for motor type: - Min -340.28235E36	Calculated: - Dynamic index: - Units group: - Max 340.28235E36	Access level: 1 Func. diagram: 7264 Unit selection: - Expert list: 1 Factory setting 0.00
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		
SERVO_S110 (FBL)	Can be changed: T Data type: FloatingPoint32 P-Group: - Not for motor type: - Min -340.28235E36	Calculated: - Dynamic index: - Units group: - Max 340.28235E36	Access level: 1 Func. diagram: 7264 Unit selection: - Expert list: 1 Factory setting 0.00
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		
SERVO_S110 (FBL)	Can be changed: T Data type: FloatingPoint32 P-Group: - Not for motor type: - Min 0.00	Calculated: - Dynamic index: - Units group: - Max 340.28235E36	Access level: 1 Func. diagram: 7264 Unit selection: - Expert list: 1 Factory setting 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		
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned32 / Binary P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7264 Unit selection: - Expert list: 1 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		
SERVO_S110 (FBL)	Can be changed: - Data type: FloatingPoint32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7264 Unit selection: - Expert list: 1 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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7264
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7264
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 RTG / INT 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7264
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which instance INT 0 of the integrator should be called.

Value:

- 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
- 9999: Do not calculate

p20265 INT 0 run sequence / INT 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7264
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7270
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7270
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-340.28235E36	340.28235E36	0.00

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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7270
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-340.28235E36	340.28235E36	0.00

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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7270
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-340.28235E36	340.28235E36	0.00

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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7270
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 $X \geq M + L - HY$.

r20271 BO: LVM 0 input quantity within interval QM / LVM 0 X within QM

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7270
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: Unsigned32	Dynamic index: -	Func. diagram: 7270
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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 $X \leq M - L + HY$.

p20273 LVM 0 RTG / LVM 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7270
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which instance LVM 0 of the double-sided limiter should be called.

Value:

- 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
- 9999: Do not calculate

p20274 LVM 0 run sequence / LVM 0 RunSeq

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7270
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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		
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned32 / FloatingPoint32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7270 Unit selection: - Expert list: 1 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		
SERVO_S110 (FBL)	Can be changed: T Data type: FloatingPoint32 P-Group: - Not for motor type: - Min -340.28235E36	Calculated: - Dynamic index: - Units group: - Max 340.28235E36	Access level: 1 Func. diagram: 7270 Unit selection: - Expert list: 1 Factory setting 0.00
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		
SERVO_S110 (FBL)	Can be changed: T Data type: FloatingPoint32 P-Group: - Not for motor type: - Min -340.28235E36	Calculated: - Dynamic index: - Units group: - Max 340.28235E36	Access level: 1 Func. diagram: 7270 Unit selection: - Expert list: 1 Factory setting 0.00
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		
SERVO_S110 (FBL)	Can be changed: T Data type: FloatingPoint32 P-Group: - Not for motor type: - Min -340.28235E36	Calculated: - Dynamic index: - Units group: - Max 340.28235E36	Access level: 1 Func. diagram: 7270 Unit selection: - Expert list: 1 Factory setting 0.00
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		
SERVO_S110 (FBL)	Can be changed: - Data type: Unsigned32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7270 Unit selection: - Expert list: 1 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 $X \geq M + L - HY$.		

r20280	BO: LVM 1 input quantity within interval QM / LVM 1 X within QM		
SERVO_S110 (FBL)	Can be changed: - Data type: Unsigned32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7270 Unit selection: - Expert list: 1 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		
SERVO_S110 (FBL)	Can be changed: - Data type: Unsigned32 P-Group: - Not for motor type: - Min -	Calculated: - Dynamic index: - Units group: - Max -	Access level: 1 Func. diagram: 7270 Unit selection: - Expert list: 1 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 $X \leq M - L + HY$.		
p20282	LVM 1 RTG / LVM 1 RTG		
SERVO_S110 (FBL)	Can be changed: T Data type: Integer16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 9999	Access level: 1 Func. diagram: 7270 Unit selection: - Expert list: 1 Factory setting 9999
Description:	Setting parameter for the run-time group in which instance LVM 1 of the double-sided limiter should be called.		
Value:	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 9999: Do not calculate		
p20283	LVM 1 run sequence / LVM 1 RunSeq		
SERVO_S110 (FBL)	Can be changed: T Data type: Unsigned16 P-Group: - Not for motor type: - Min 0	Calculated: - Dynamic index: - Units group: - Max 7999	Access level: 1 Func. diagram: 7270 Unit selection: - Expert list: 1 Factory setting 730
Description:	Setting parameter for the run sequence of instance LVM 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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned32 / FloatingPoint32	Dynamic index: -	Func. diagram: 7264
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7264
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	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

SERVO_S110 (FBL)	Can be changed: -	Calculated: -	Access level: 1
	Data type: FloatingPoint32	Dynamic index: -	Func. diagram: 7264
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	-	-	-

Description: Display parameter for output quantity Y of instance DIF 0 of the differentiating element.

p20287 DIF 0 RTG / DIF 0 RTG

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Integer16	Dynamic index: -	Func. diagram: 7264
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min	Max	Factory setting
	0	9999	9999

Description: Setting parameter for the run-time group in which instance DIF 0 of the differentiating element should be called.

Value:

- 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
- 9999: Do not calculate

p20288 **DIF 0 run sequence / DIF 0 RunSeq**

SERVO_S110 (FBL)	Can be changed: T	Calculated: -	Access level: 1
	Data type: Unsigned16	Dynamic index: -	Func. diagram: 7264
	P-Group: -	Units group: -	Unit selection: -
	Not for motor type: -		Expert list: 1
	Min 0	Max 32000	Factory setting 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.

Function diagrams

3

Contents

3.1	Table of Contents	3-124
3.2	Explanations for the function diagrams	3-125
3.3	Logic function blocks	3-127
3.4	Arithmetic function blocks	3-132
3.5	Time function blocks	3-136
3.6	Memory function blocks	3-140
3.7	Switch function blocks	3-142
3.8	Control function blocks	3-144
3.9	Complex function blocks	3-148

3.1 Table of Contents

3.2 Explanations for the function diagrams	3-125
7200 – General information	3-126
3.3 Logic function blocks	3-127
7210 – AND (AND function block with four inputs)	3-128
7212 – OR (OR function block with four inputs)	3-129
7214 – XOR (XOR function block with four inputs)	3-130
7216 – NOT (inverter)	3-131
3.4 Arithmetic function blocks	3-132
7220 – ADD (adder with four inputs), SUB (subtractor)	3-133
7222 – MUL (multiplier), DIV (divider)	3-134
7224 – AVA (absolute value generator)	3-135
3.5 Time function blocks	3-136
7230 – MFP (pulse generator), PCL (pulse contractor)	3-137
7232 – PDE (ON delay), PDF (OFF delay)	3-138
7234 – PST (pulse stretcher)	3-139
3.6 Memory function blocks	3-140
7240 – RSR (RS flip-flop), DFR (D flip-flop)	3-141
3.7 Switch function blocks	3-142
7250 – BSW (binary switch), NSW (numeric switch)	3-143
3.8 Control function blocks	3-144
7260 – LIM (limiter)	3-145
7262 – PT1 (smoothing element)	3-146
7264 – INT (integrator), DIF (derivative-action element)	3-147
3.9 Complex function blocks	3-148
7270 – LVM (double-sided threshold alarm with hysteresis)	3-149

3.2 Explanations for the function diagrams

Function diagrams

7200 – General information

3-126

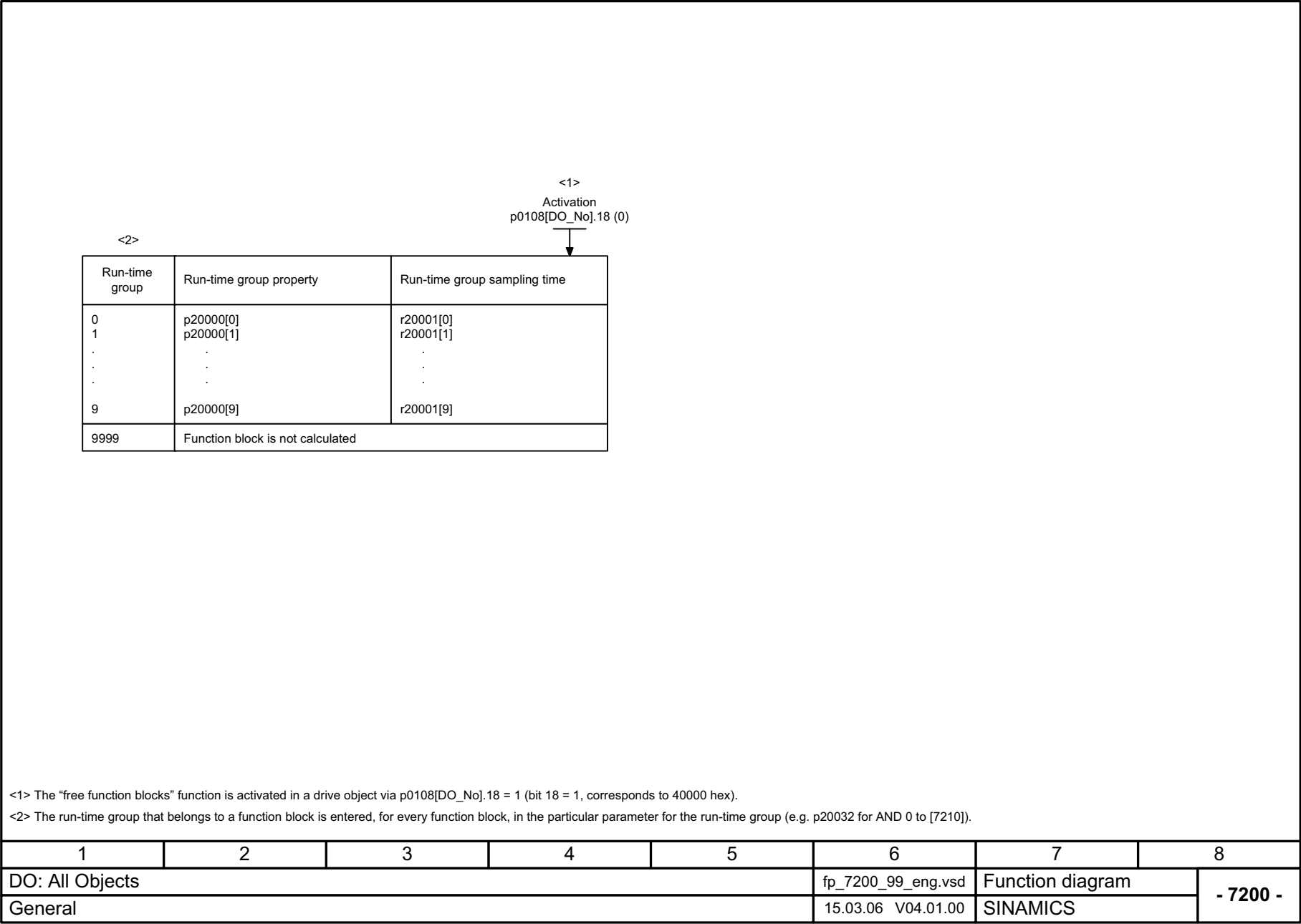


Figure 3-1 7200 – General information

3.3 Logic function blocks

Function diagrams

7210 – AND (AND function block with four inputs)	3-128
7212 – OR (OR function block with four inputs)	3-129
7214 – XOR (XOR function block with four inputs)	3-130
7216 – NOT (inverter)	3-131

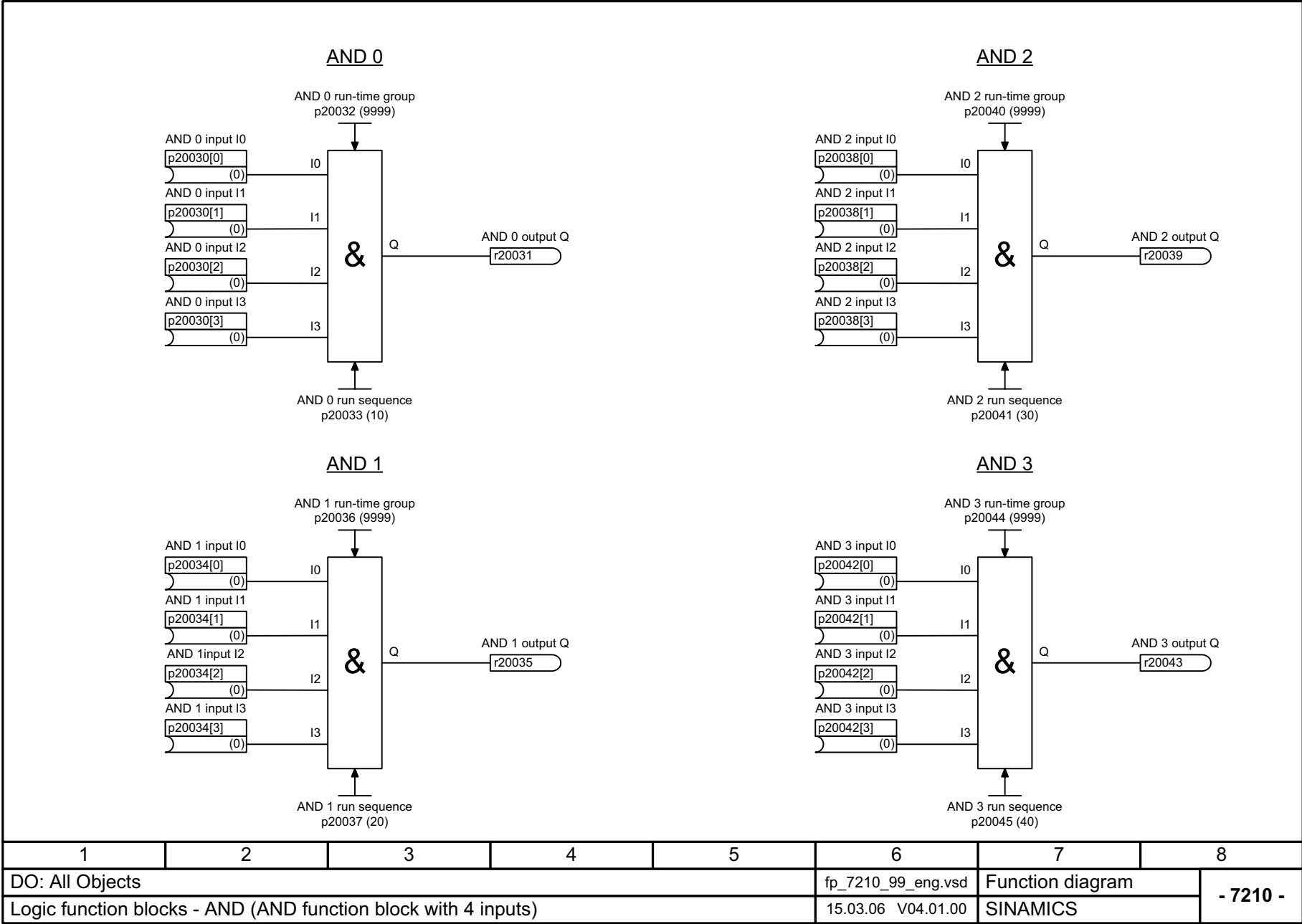


Figure 3-2 7210 – AND (AND function block with four inputs)

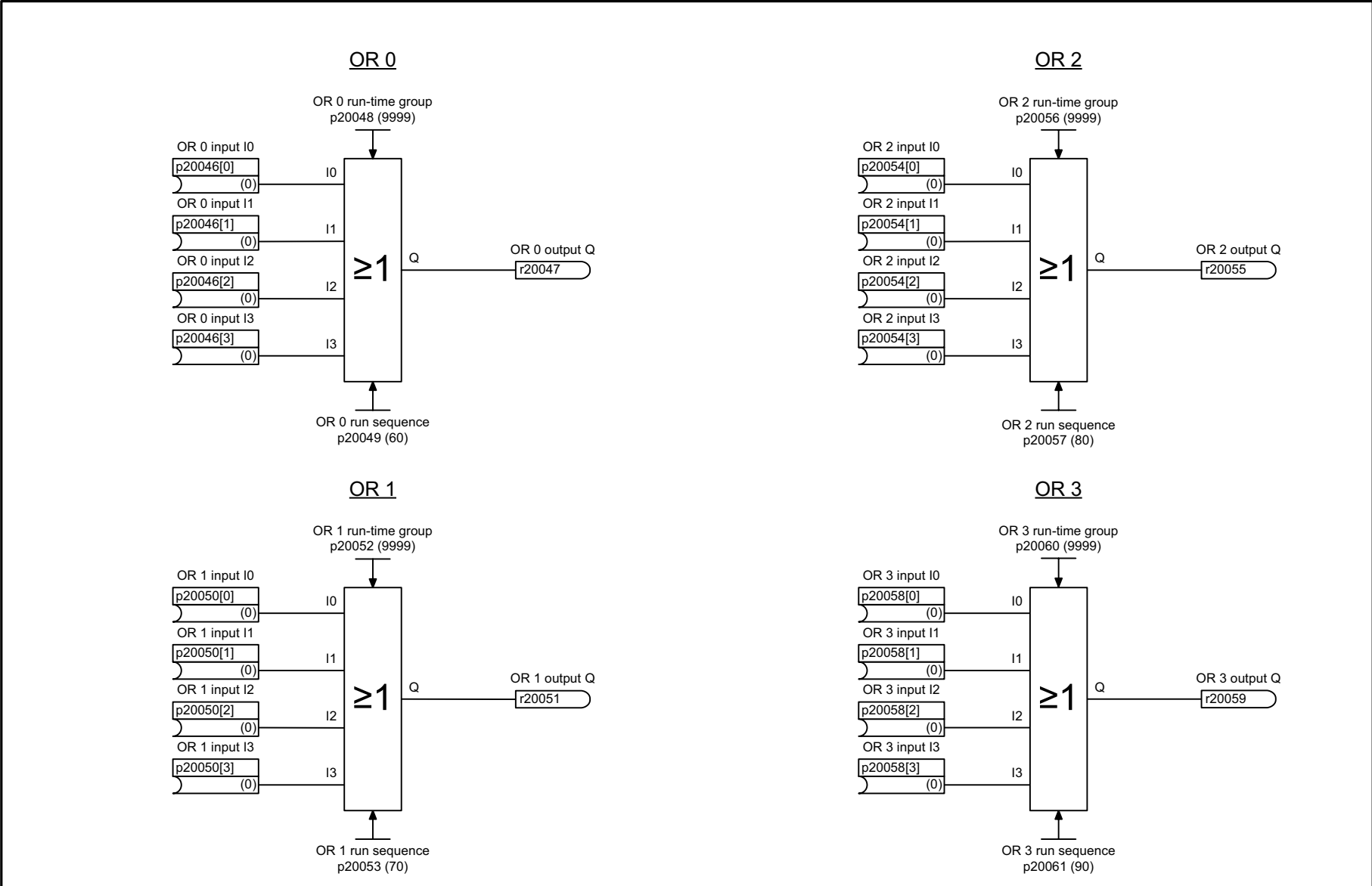


Figure 3-3

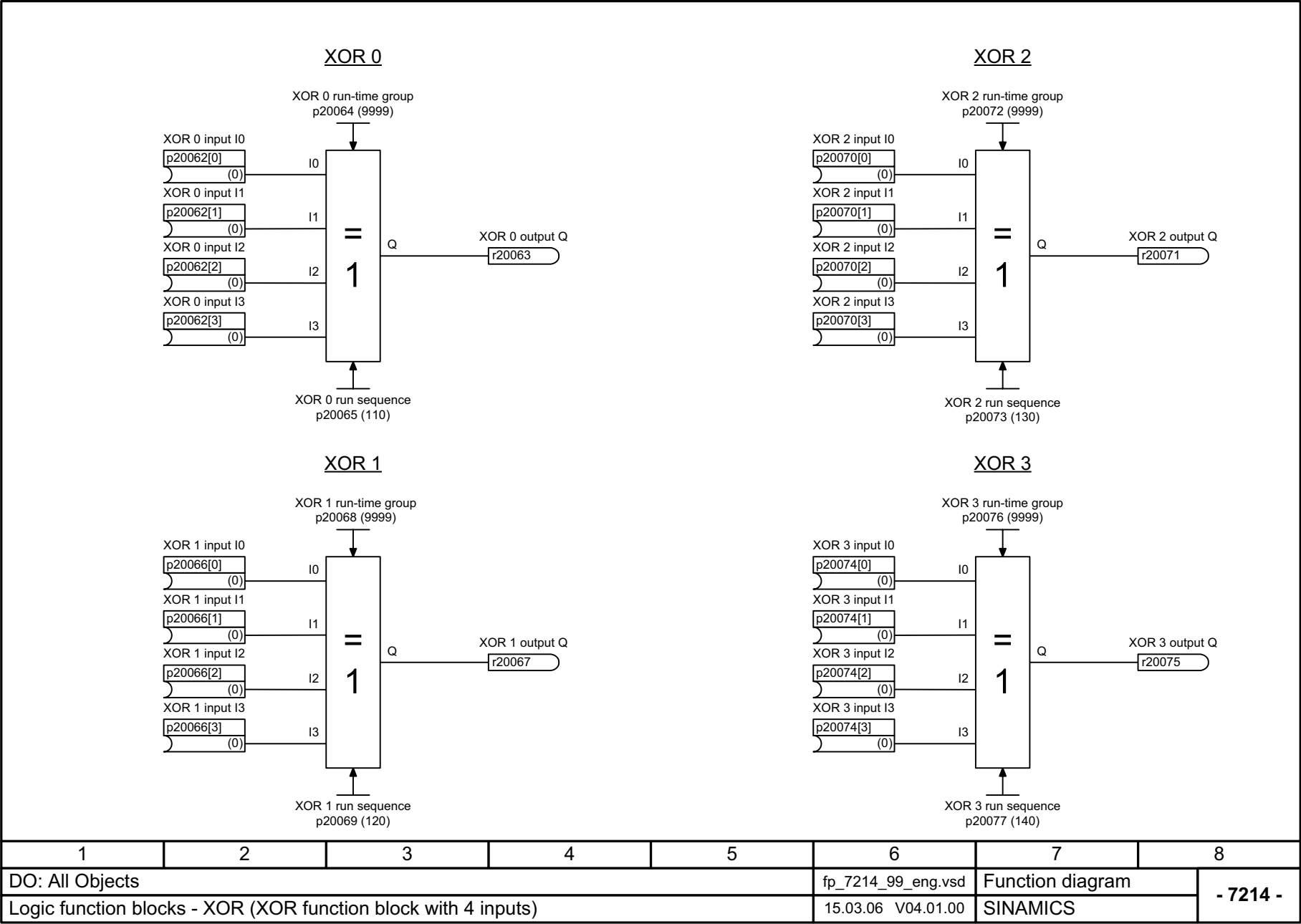


Figure 3-4 7214 – XOR (XOR function block with four inputs)

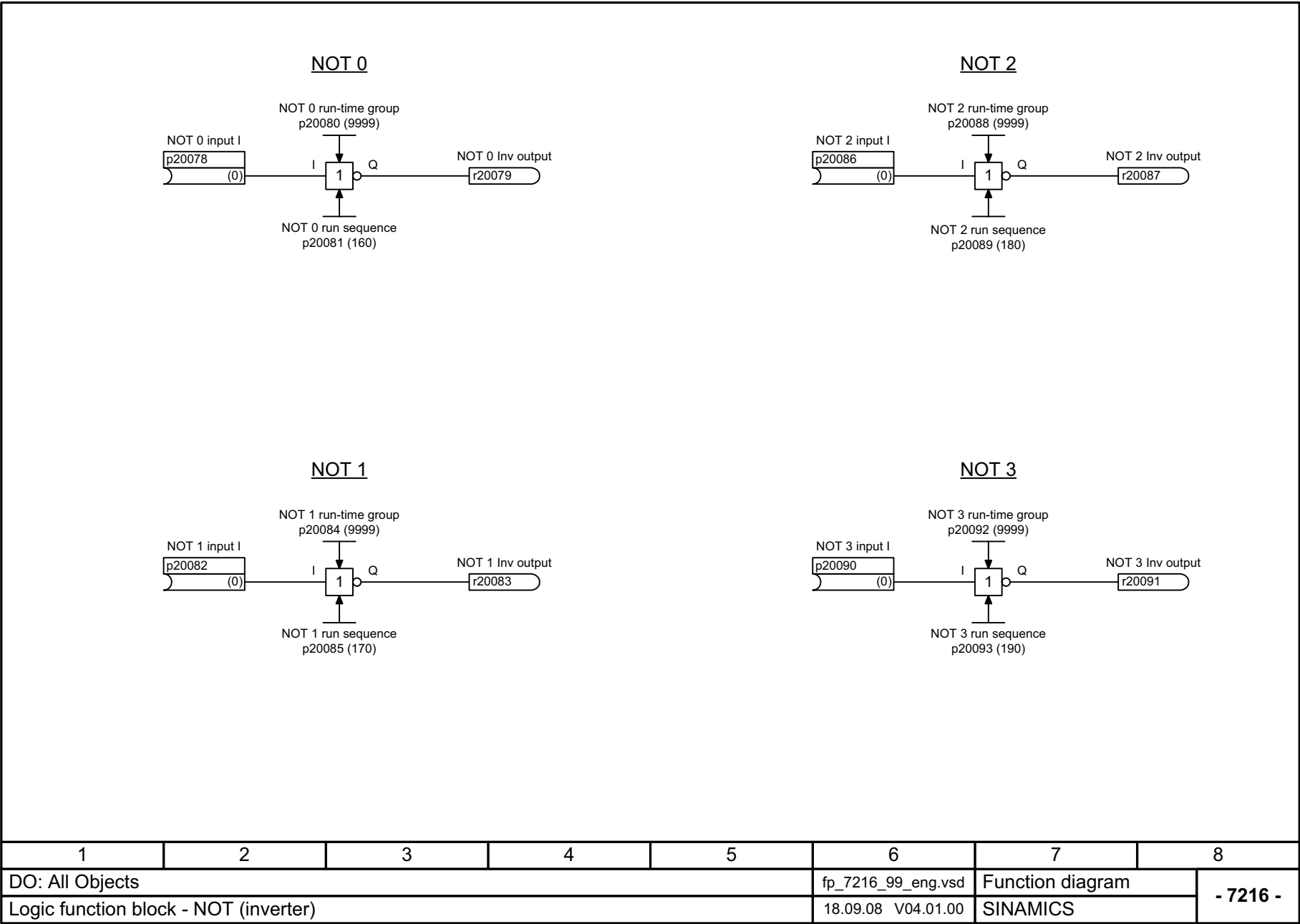


Figure 3-5 7216 – NOT (inverter)

3.4 Arithmetic function blocks

Function diagrams

7220 – ADD (adder with four inputs), SUB (subtractor)	3-133
7222 – MUL (multiplier), DIV (divider)	3-134
7224 – AVA (absolute value generator)	3-135

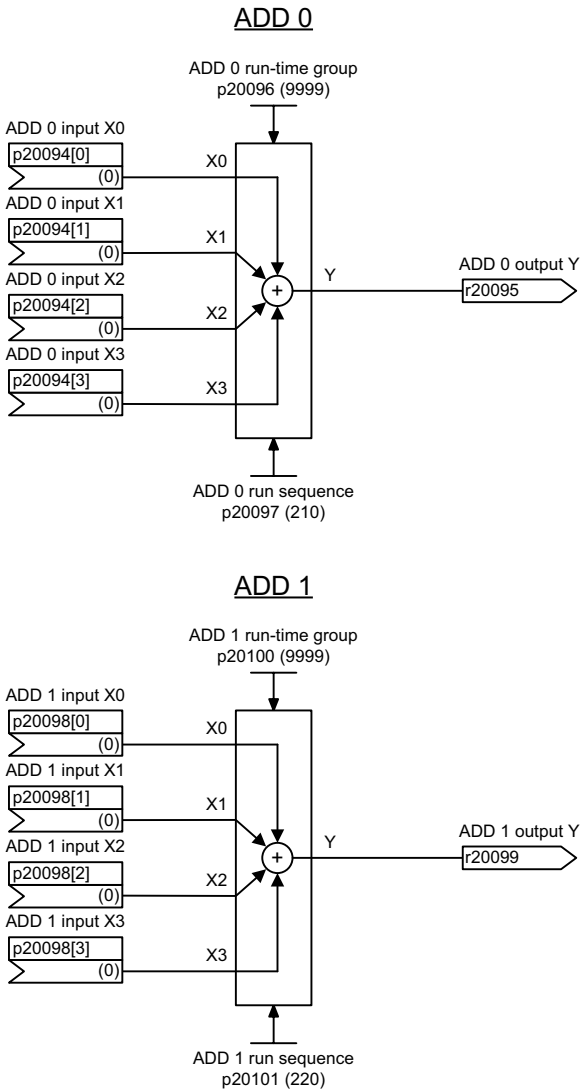
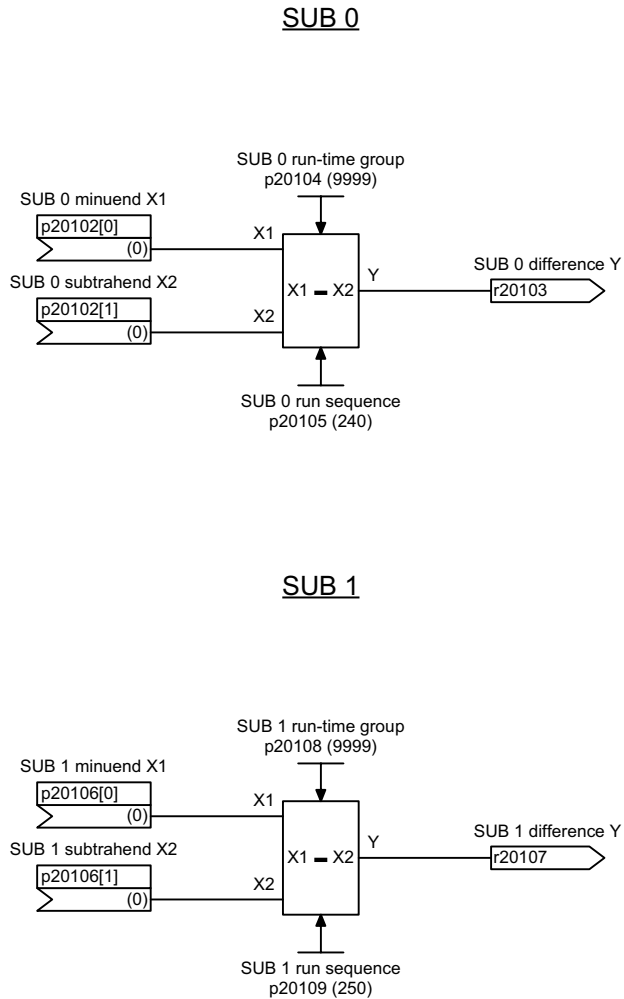


Figure 3-6 7220 – ADD (adder with four inputs), SUB (subtractor)

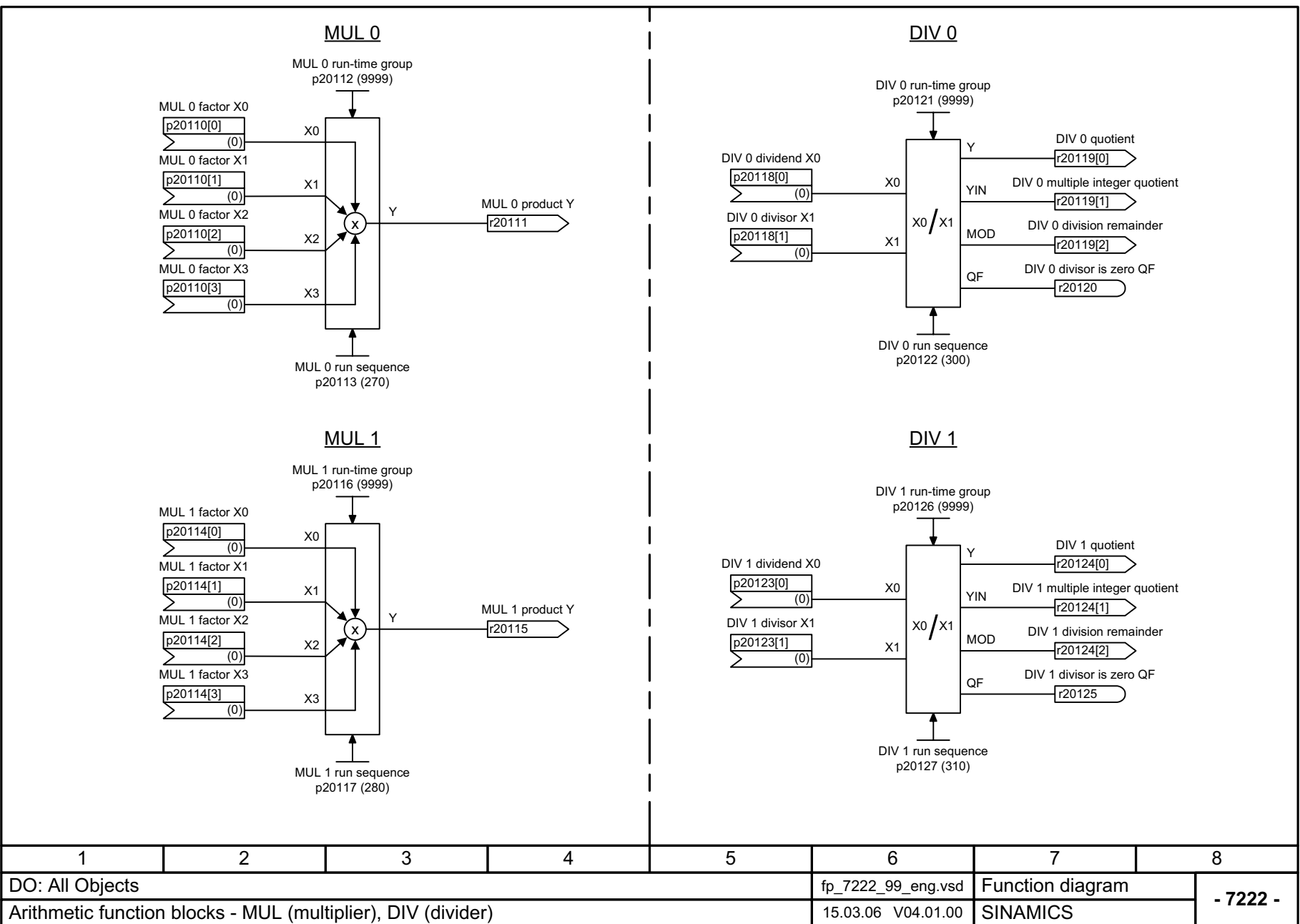


Figure 3-7 7222 – MUL (multiplier), DIV (divider)

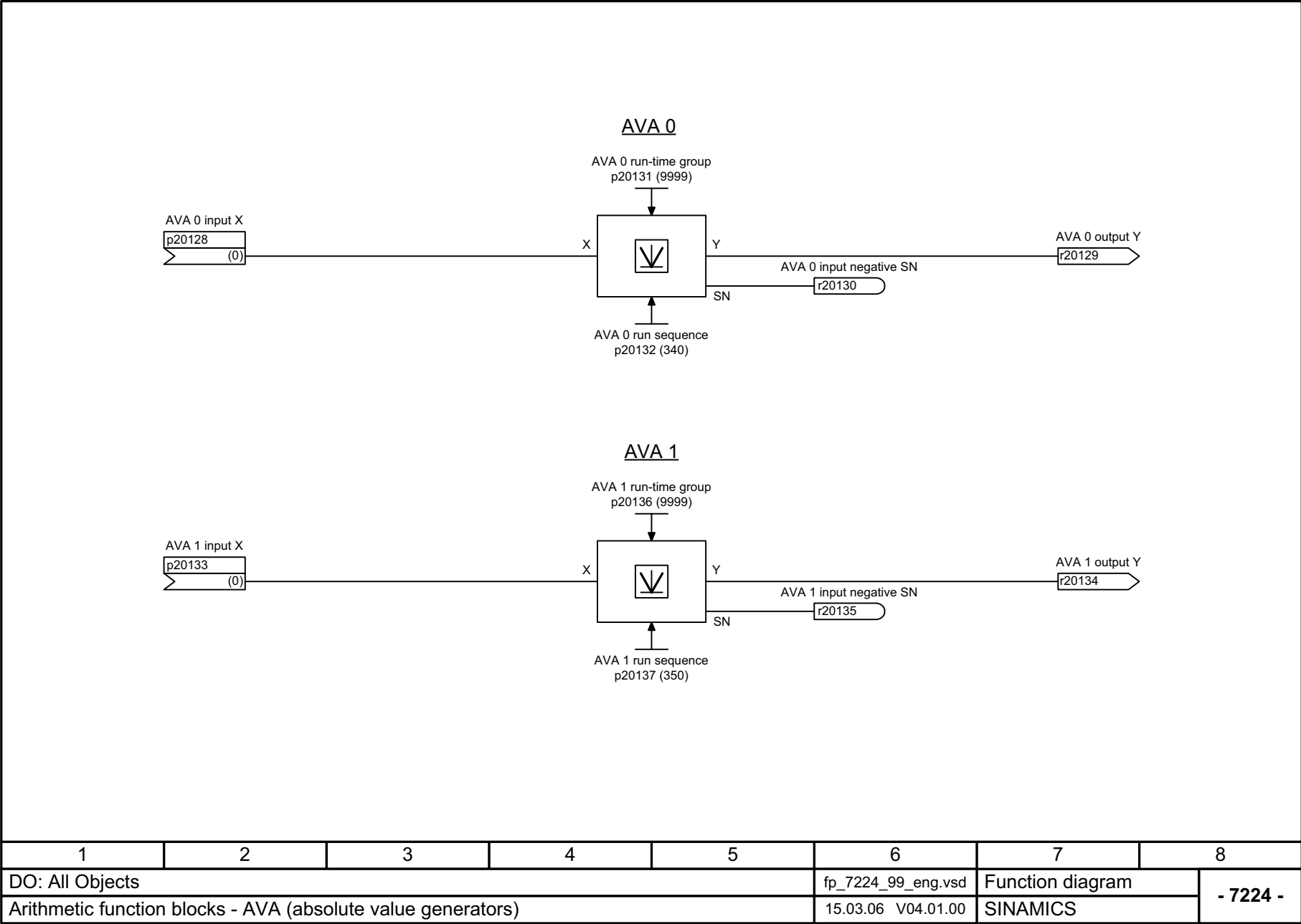
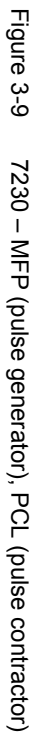


Figure 3-8 7224 – AVA (absolute value generator)

3.5 Time function blocks

Function diagrams

7230 – MFP (pulse generator), PCL (pulse contractor)	3-137
7232 – PDE (ON delay), PDF (OFF delay)	3-138
7234 – PST (pulse stretcher)	3-139



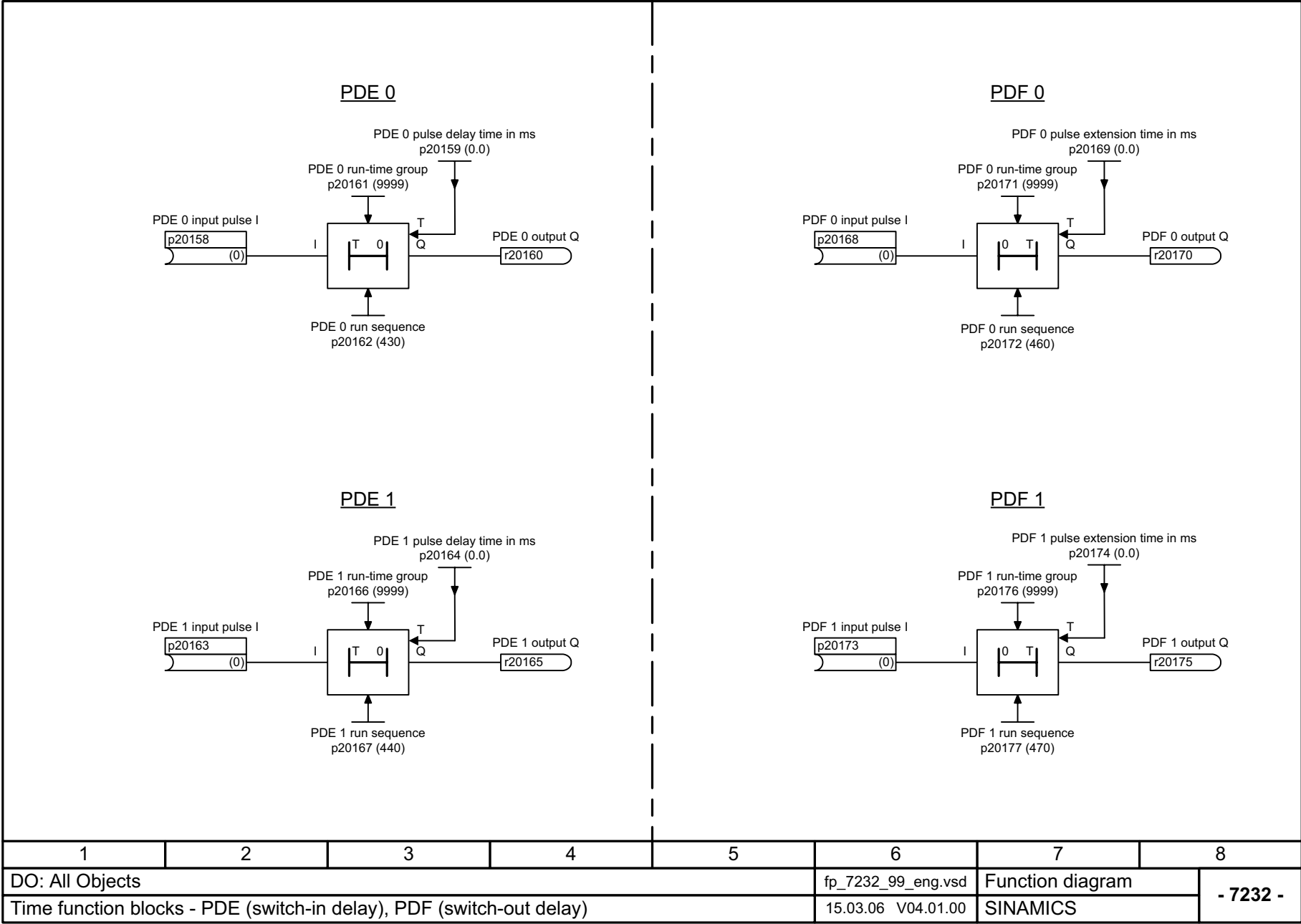


Figure 3-10 PDE (ON delay), PDF (OFF delay)

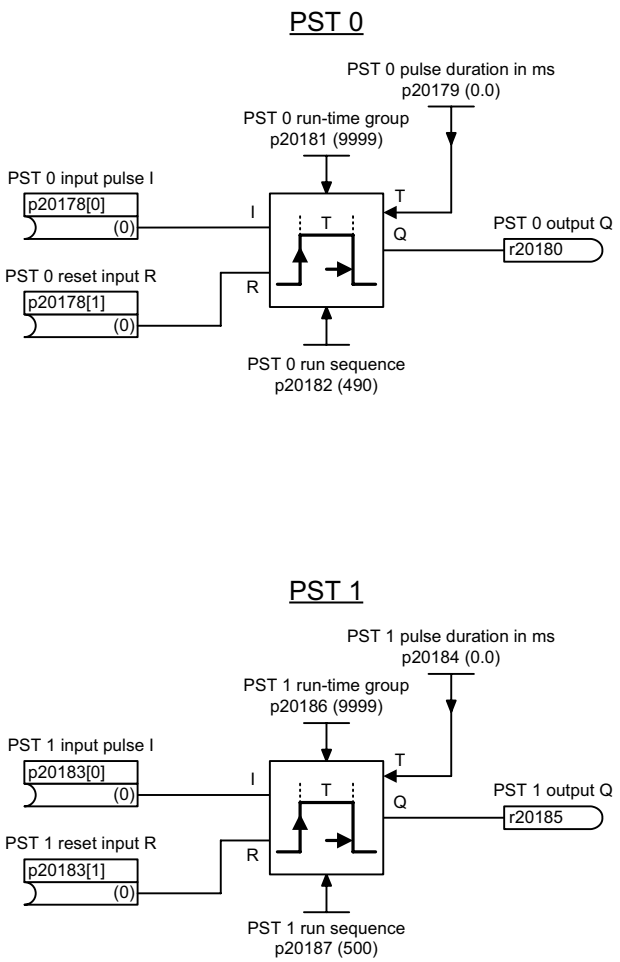


Figure 3-11 7234 – PST (pulse stretcher)

1	2	3	4	5	6	7	8
DO: All Objects					fp_7234_99_eng.vsd	Function diagram	- 7234 -
Time function blocks - PST (pulse extender)					15.03.06 V04.01.00	SINAMICS	

3.6 Memory function blocks

Function diagrams

7240 – RSR (RS flip-flop), DFR (D flip-flop)

3-141

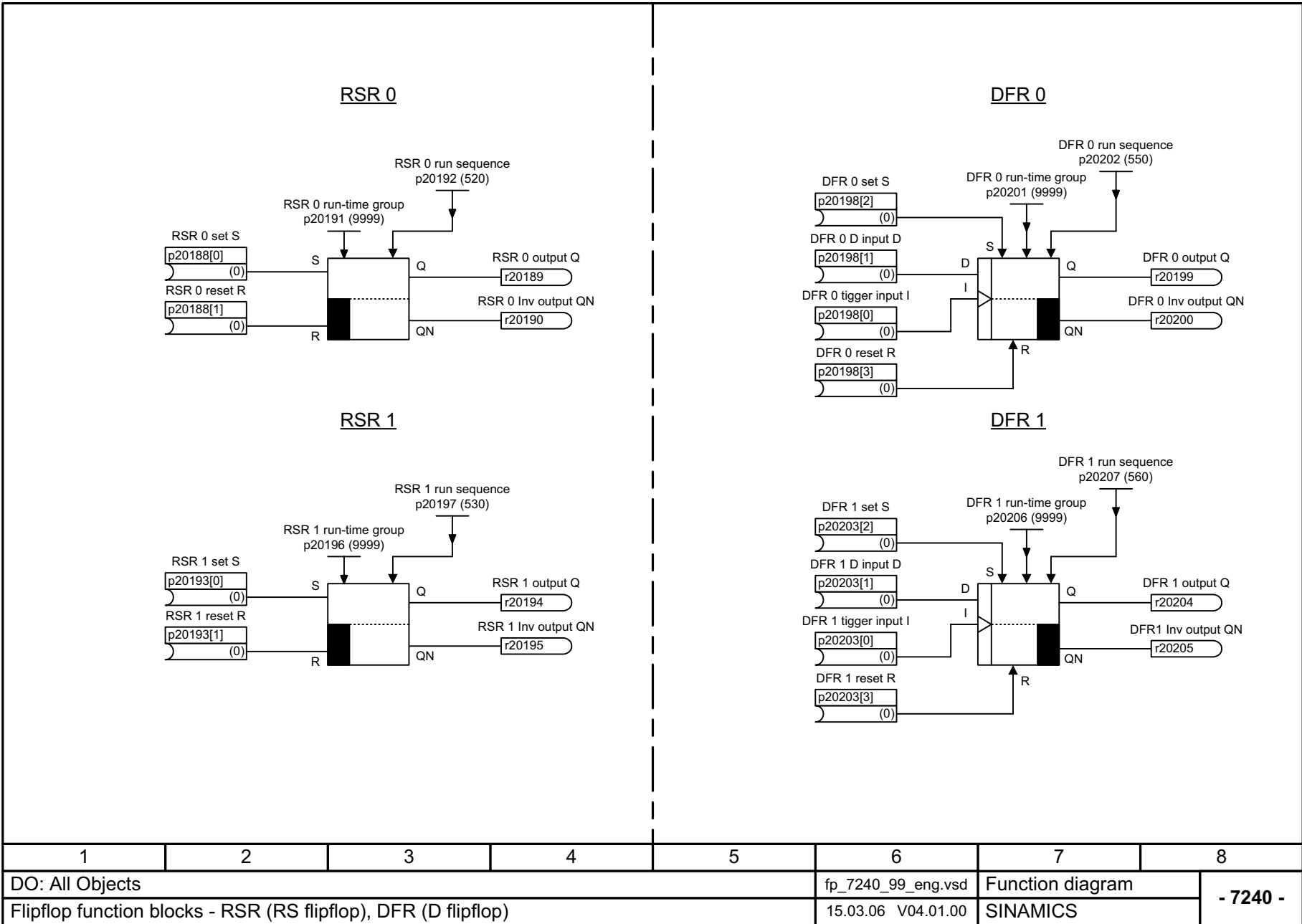


Figure 3-12 7240 – RSR (RS flip-flop), DFR (D flip-flop)

3.7 Switch function blocks

Function diagrams

7250 – BSW (binary switch), NSW (numeric switch)

3-143

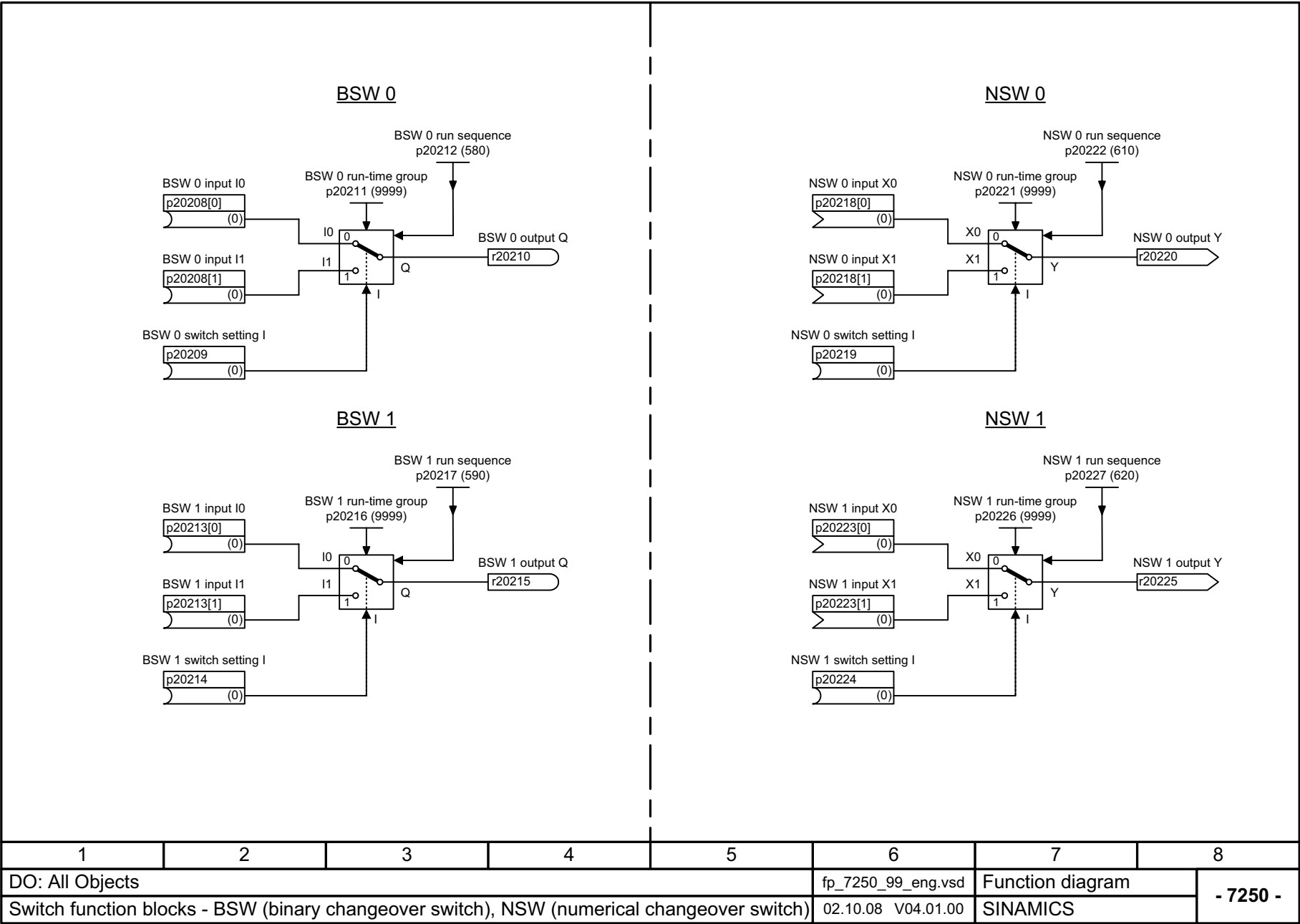


Figure 3-13 7250 – BSW (binary switch), NSW (numeric switch)

3.8 Control function blocks

Function diagrams

7260 – LIM (limiter)	3-145
7262 – PT1 (smoothing element)	3-146
7264 – INT (integrator), DIF (derivative-action element)	3-147

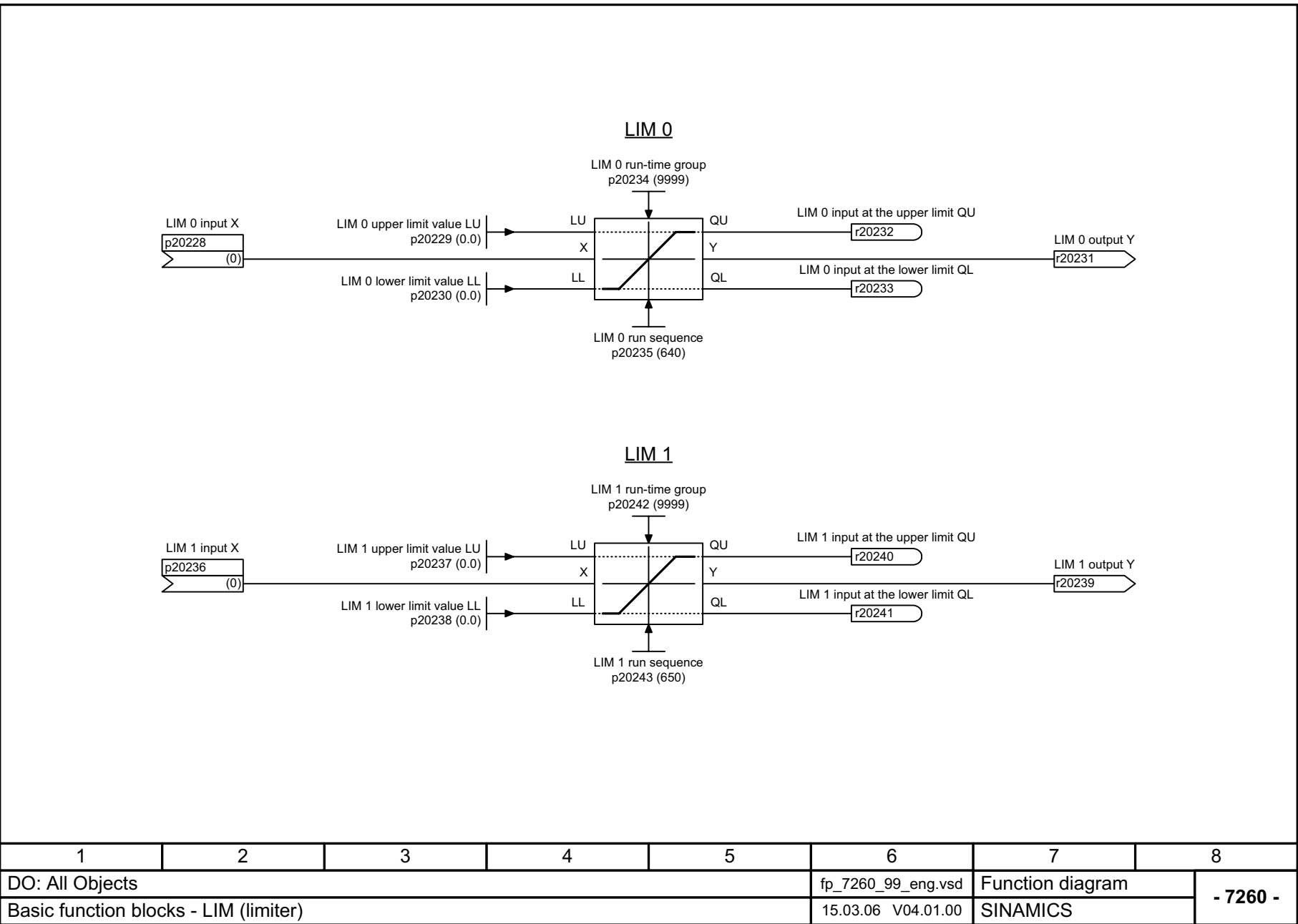
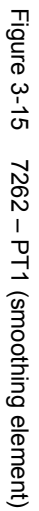


Figure 3-14 7260 – LIM (limiter)



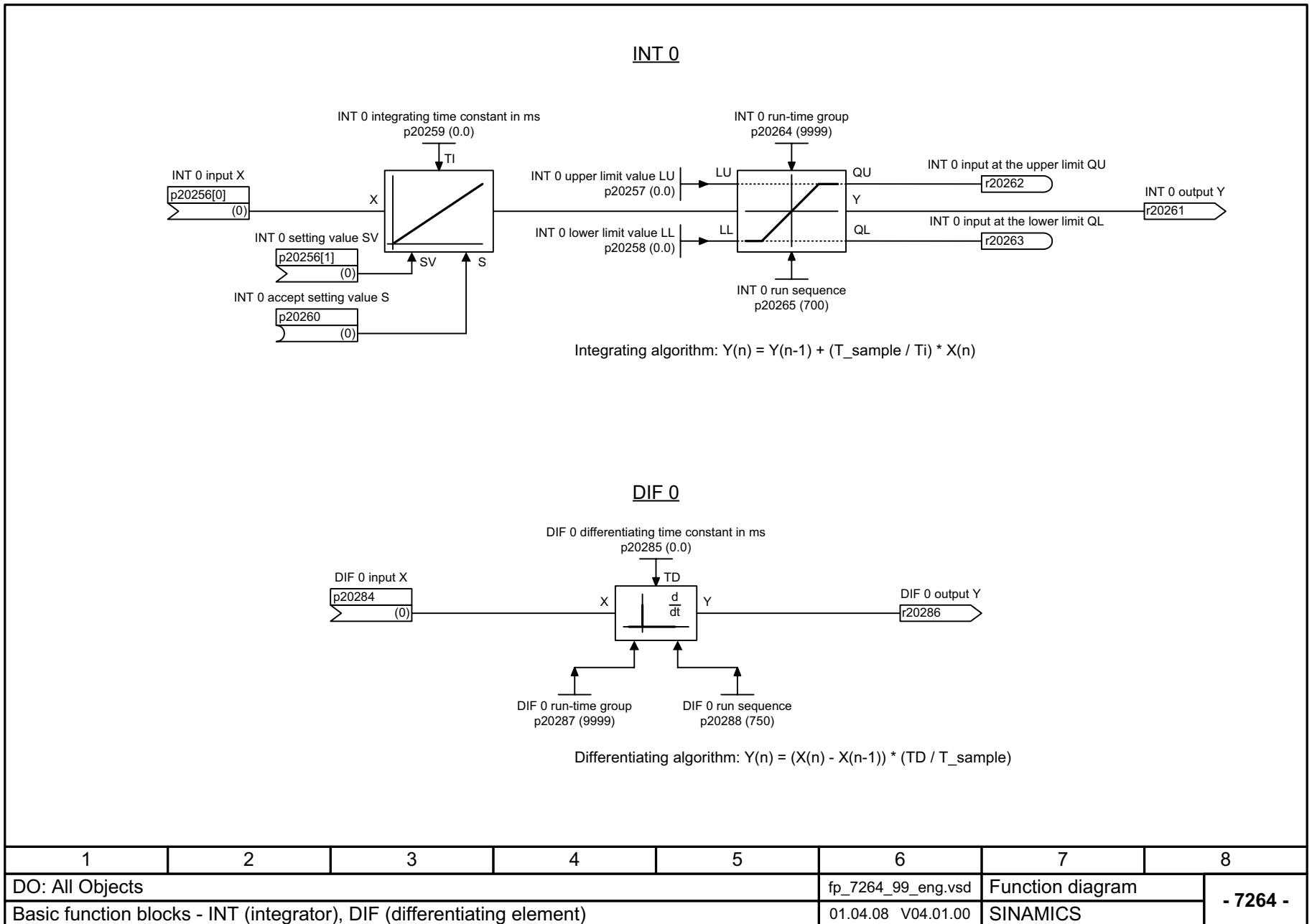


Figure 3-16 7264 – INT (integrator), DIF (derivative-action element)

3.9 Complex function blocks

Function diagrams

7270 – LVM (double-sided threshold alarm with hysteresis)

3-149

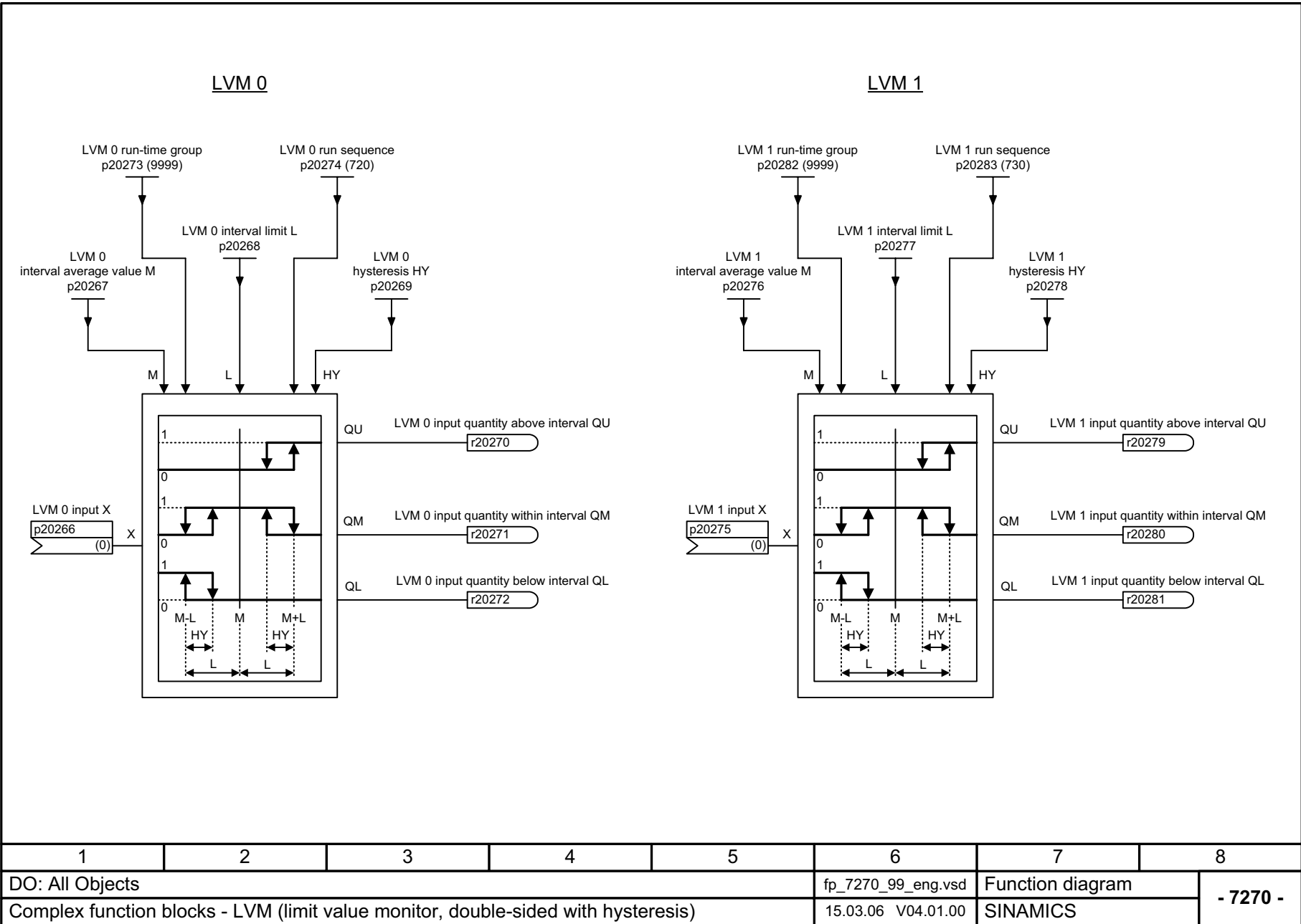


Figure 3-17 7270 – LVM (double-sided threshold alarm with hysteresis)

Faults and Alarms

4

Contents

4.1	Overview of faults and alarms	4-152
4.2	List of faults and alarms	4-160

4.1 Overview of faults and alarms

4.1.1 General information about faults and alarms

Indicating faults and alarms

If a fault occurs, the drive indicates the fault and/or alarm.

The following methods for displaying faults and alarms are available:

- Via the fault and alarm buffer with PROFIBUS.
- Online via the commissioning software.

Differences between faults and alarms

The differences between faults and alarms are as follows:

Table 4-1 Differences between faults and alarms

Type	Description
Faults	<p>What happens when a fault occurs?</p> <ul style="list-style-type: none"> • The appropriate fault reaction is triggered. • Status signal ZSW1.3 is set. • The fault is entered in the fault buffer. <p>How are faults eliminated?</p> <ul style="list-style-type: none"> • Remove the original cause of the fault. • Acknowledge the fault.
Alarms	<p>What happens when an alarm occurs?</p> <ul style="list-style-type: none"> • Status signal ZSW1.7 is set. • The alarm is entered in the alarm buffer. <p>How are alarms eliminated?</p> <ul style="list-style-type: none"> • 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	PROFId- rive	Reaction	Description
NONE	-	None	No reaction when a fault occurs.
OFF1	ON/ OFF	Brake along the ramp generator deceleration ramp followed by pulse disable	<p>Closed-loop speed control (p1300 = 20, 21)</p> <ul style="list-style-type: none"> • $n_{set} = 0$ is set immediately to brake the drive along the deceleration ramp (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. <p>Zero speed is detected if the actual speed drops below the threshold in p1226 or if the monitoring time (p1227) started when speed setpoint \leq speed threshold (p1226) has expired.</p> <p>Closed-loop torque control (p1300 = 23)</p> <ul style="list-style-type: none"> • The following applies to closed-loop torque control mode: Reaction as for OFF2. • When the system switches to closed-loop control with p1501, the following applies: No separate braking reaction. If the actual speed drops below the speed threshold (p1226) or the timer stage (p1227) has expired, the motor holding brake (if parameterized) is closed. The pulses are suppressed when the brake application time (p1217) expires.
OFF2	COAST STOP	Internal/external pulse disable	<p>Closed-loop speed and torque control</p> <ul style="list-style-type: none"> • 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.

Table 4-2 Fault reactions, Fortsetzung

List	PROFId- rive	Reaction	Description
OFF3	QUICK STOP	Brake along the OFF3 decelera- tion ramp fol- lowed by pulse disable	<p>Closed-loop speed control (p1300 = 20, 21)</p> <ul style="list-style-type: none"> • $n_set = 0$ is input immediately to brake the drive along the OFF3 deceleration ramp (p1135). • When zero speed is detected, the motor holding brake (if parameterized) is closed. The pulses are suppressed when the brake application time (p1217) expires. <p>Zero speed is detected if the actual speed drops below the threshold in p1226 or if the monitoring time (p1227) started when speed setpoint \leq speed threshold (p1226) has expired.</p> <ul style="list-style-type: none"> • "Switching on inhibited" is activated. <p>Closed-loop torque control (p1300 = 23)</p> <ul style="list-style-type: none"> • Changeover to speed-controlled operation and other reactions as described for speed-controlled operation.
STOP1	-	-	In preparation
STOP2	-	$n_set = 0$	<ul style="list-style-type: none"> • $n_set = 0$ is input immediately to brake the drive along the OFF3 deceleration ramp (p1135). • The drive remains in closed-loop speed control mode.
IASC/ DCBRAKE	-	-	<ul style="list-style-type: none"> • 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 injection braking is triggered. <p>The DC brake must have been put into operation (p1232, p1233, p1234).</p>
ENCODER	-	Internal/external pulse disable (p0491)	<p>The fault reaction ENCODER is applied as a function of the setting in p0491.</p> <p>Factory setting: p0491 = 0 --> Encoder fault causes OFF2</p>

Acknowledgement of faults

The list of faults and alarms specifies how to acknowledge each fault after the cause has been remedied.

Table 4-3 Acknowledgement of faults

Acknowledg- ment	Description								
POWER ON	<p>The fault is acknowledged by a POWER ON process (switch drive unit off and on again).</p> <p>Note: If this action has not eliminated the fault cause, the fault is displayed again immediately after power up.</p>								
IMMEDIATELY	<p>Faults can be acknowledged one one drive object (Points 1 to 3) or on all drive objects (point 4) as follows:</p> <p>1 Acknowledge by setting parameter: p3981 = 0 --> 1</p> <p>2 Acknowledge via binector inputs:</p> <table border="0"> <tr> <td>p2103</td> <td>BI: 1. Acknowledge faults</td> </tr> <tr> <td>p2104</td> <td>BI: 2. Acknowledge faults</td> </tr> <tr> <td>p2105</td> <td>BI: 3. Acknowledge faults</td> </tr> </table> <p>3 Acknowledge using PROFIBUS control signal: STW1.7 = 0 --> 1 (edge)</p> <p>4 Acknowledging all faults</p> <table border="0"> <tr> <td>p2102</td> <td>BI: Acknowledging all faults</td> </tr> </table> <p>All of the faults on all of the drive objects of the drive system can be acknowledged using this binector input.</p> <p>Note:</p> <ul style="list-style-type: none"> • These faults can also be acknowledged by a POWER ON operation. • If this action has not eliminated the fault cause, the fault is displayed again immediately after power up. • Safety Integrated faults The "Safe Stop" (SH) function must be deselected before these faults are acknowledged. 	p2103	BI: 1. Acknowledge faults	p2104	BI: 2. Acknowledge faults	p2105	BI: 3. Acknowledge faults	p2102	BI: Acknowledging all faults
p2103	BI: 1. Acknowledge faults								
p2104	BI: 2. Acknowledge faults								
p2105	BI: 3. Acknowledge faults								
p2102	BI: Acknowledging all faults								
PULSE INHIBIT	<p>The fault can only be acknowledged with a pulse inhibit (r0899.11 = 0).</p> <p>The same options are available for acknowledging as described under acknowledge IMMEDIATELY.</p>								

Save fault buffer on POWER OFF

The contents of the fault buffer are saved to a non-volatile storage medium when the Control Unit 320 (CU320) is switched off (i.e. the fault buffer history is still available when the unit is switched on again).

Note:

Preconditions:

- Firmware version 2.2 or higher.
- Control Unit 320 (CU320) with hardware version C or higher.
The hardware version is shown on the rating plate or can be displayed online with the commissioning software (in Project Navigator under "Drive Unit" --> Configuration --> Version Overview).

If these conditions are not fulfilled, the contents of the fault buffer are deleted at every POWER ON operation.

The fault buffer of a drive object comprises the following parameters:

- r0945[0...63], r0947[0...63], r0948[0...63], r0949[0...63]
- r2109[0...63], r2130[0...63], r2133[0...63], r2136[0...63]

The fault buffer contents can be deleted manually as follows:

- Delete fault buffer for all drive objects:
p2147 = 1 --> p2147 = 0 is automatically set after execution.
- Delete fault buffer for a specific drive object:
p0952 = 0 --> The parameter belongs to the specified drive object.

The fault buffer contents are automatically deleted when the following occurs:

- Restore factory setting (p0009 = 30 and p0976 = 1).
- Download with modified structure (e.g. number of drive objects changed).
- Power-up after other parameter values have been loaded (e.g. p0976 = 10).
- Upgrade firmware to later version.

4.1.2 Explanation of the list of faults and alarms

The data in the following example has been chosen at random. A description can contain the information listed below. Some of the information is optional.

The list of faults and alarms (See Section 4.2) is structured as follows:

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

Axxxxx (F, N)	Fault location (optional): Name
Message value:	Component number: %1, cause: %2
Drive object:	List of objects.
Reaction:	NONE
Acknowledgment:	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.
Reaction to F:	A_INFEED: OFF2 (OFF1, NONE) SERVO: NONE (OFF1, OFF2, OFF3) VECTOR: NONE (OFF1, OFF2, OFF3)
Acknowledgment for F:	IMMEDIATELY (POWER ON)
Reaction to N:	NONE
Acknowledge-	

Axxxxx	Alarm xxxxx
Axxxxx (F, N)	Alarm xxxxx (message type can be changed to F or N)
Fxxxxx	Fault xxxxx
Fxxxxx (A, N)	Fault xxxxx (report type can be changed to F or N)
Nxxxxx	No message
Nxxxxx (A)	No message (message type can be changed to A)
Cxxxxx	Safety message (separate message buffer)

A report 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 Report" or "Internal Report"
- C means "Safety message"

The optional brackets indicate whether the type specified for this report can be changed and which report types can be adjusted via parameter (p2118, p2119).

Information about reaction and acknowledgement is specified independently for a report with adjustable report type (e.g. reaction to F, acknowledgement for F).

Note:

You can change the default properties of a fault or alarm by setting parameters.

References: /IH1/ SINAMICS S120 Commissioning Manual
Chapter "Diagnostics"

The list of faults and alarms (see Chapter 4.2) provide information referred to the properties of a message/report that have been set as standard. If the properties of a specific message/report 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 report number are all used to identify the report (e.g. with the commissioning software).

Message value:

The information provided under message value tells you about the composition of the fault/warning value.

Example:

Message value: Component number: %1, cause: %2

This fault value or warning value contains information about the component number and cause. The entries %1 and %2 are placeholders, which are filled appropriately in online operation with the commissioning software.

Reaction: Default fault reaction (adjustable fault reaction)

Specifies the default reaction in the event of a fault.

The optional brackets indicate whether the default fault reactions can be changed and which fault reactions can be adjusted via parameters (p2100, p2101).

Note:

See Chapter 4.1.1

Acknowledgment: Default acknowledgement (adjustable acknowledgement)

Specifies the default method of acknowledging faults after the cause has been eliminated.

The optional brackets indicate whether the default acknowledgement can be changed and which acknowledgement can be adjusted via parameter (p2126, p2127).

Note:

See Chapter 4.1.1

Cause:

Description of the possible causes of the fault/alarm A fault or alarm value can also be specified (optional).

Fault value (r0949, format):

The fault value is entered in the fault buffer in r0949[0...63] and specifies additional, precise information about a fault.

Alarm value (r2124, format):

The alarm value specifies additional, precise information about an alarm.

The alarm value is entered in the alarm buffer in r2124[0...7] and specifies additional, precise information about an alarm.

Remedy:

Description of the methods available for eliminating the cause of the active fault or alarm.



WARNING

In certain cases, the servicing and maintenance personnel are responsible for choosing a suitable method for eliminating the cause of faults.

4.2 List of faults and alarms

Product: SINAMICS FBLOCKS, Version: 4101500, Language: eng,
Objects: General OA obj.

F50510	Logon of the run-time group rejected
Message value:	-
Drive object:	All objects
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	When the run-time groups of the free function blocks attempted to log on with the internal interface of 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. See also: r20008 (Hardware sampling times available)
Remedy:	- check number of different hardware sampling times (r20008, r7903). - if necessary, deactivate the function module "free function blocks" again (p0108[0...15].18 = 0) on the drive object on which the free function blocks were last activated (p0108[0...15].18 = 1). The assignment of drive object numbers to the index numbers of the p0108[0...15] can be read out in p0101[0...15] and to the drive object types in p0107[0...15] on the drive object of the CU or CX (only with SM150). Carry out a POWER ON.
F50511	Memory no longer available for free function blocks
Message value:	-
Drive object:	All objects
Reaction:	NONE
Acknowledge:	IMMEDIATELY
Cause:	When the free function blocks were activated, more memory was requested than was available on the Control Unit.
Remedy:	Deactivate the function module "free function blocks" again (p0108[0...15].18 = 0) on the drive object on which the free function blocks were last activated (p0108[0...15].18 = 1). The assignment of drive object numbers to the index numbers of the p0108[0...15] can be read out in p0101[0...15] and to the drive object types in p0107[0...15] on the drive object of the CU or CX (only with SM150). Carry out a POWER ON.
A50512	Limit for available computation time reached
Message value:	-
Drive object:	All objects
Reaction:	NONE
Acknowledge:	NONE
Cause:	The recommended limits for the computation time utilization were exceeded. For the free function blocks, it is not permissible that additional function blocks or run-time groups are activated and it is also not permissible that the sampling time of the run-time groups is further shortened. Alarm value (r2124, interpret binary): Bit 0 = 1: The limit of 90% of the average computation time utilization (r9976[1]) was exceeded. Bit 1 = 1: The computation time utilization in the cycle time slices (r9976[5]) has exceeded 90%.
Remedy:	Reduce the number of activated function blocks, increase the sampling times for the run-time groups used, deactivate function modules on the active drive objects, reduce the number of drive objects. Note: The limit values specified in the "Free function blocks function manual" in chapter "Computation time load" must be adhered to.

A50513 (F) Run sequence value was already assigned

Message value: -

Drive object: All objects

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.
Alarm value (r2124, interpret decimal):
yyyyxxxx dec
xxxx = Parameter number that rejected the run sequence value.
yyyy = Parameter number that already has the run sequence value.

Remedy: Set another value that is still available on this drive object for the run sequence.

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY

A50514 Sampling time of the fixed run-time group differs

Message value: -

Drive object: All objects

Reaction: NONE

Acknowledge: NONE

Cause: The sampling time of a system function was set to a value (p0112, p0115) lower than the smallest permissible sampling time that is allowed for the fixed run-time group belonging to this system block (1 ms). The fixed run-time group involved is assigned as a minimum to one block.
Alarm value (r2124, interpret decimal):
Number of the run-time group (corresponds to the index of p20000) where the sampling time does not correspond to the sampling time of the associated system function (e.g. setpoint channel).

Remedy: Using p0112 or p0115, increase the sampling time of the system function to the minimum permissible sampling time for the run-time groups of 1 ms or change the sampling time assignment of this run-time group in p20000[0...9].

List of abbreviations

A

Note:

The following list of abbreviations contains the abbreviations and their meanings used in the entire SINAMICS user documentation.

Abbreviation	Derivation of abbreviation	Meaning
A		
A...	Alarm	Alarm
AC	Alternating Current	Alternating current
ADC	Analog Digital Converter	Analog digital converter
AI	Analog Input	Analog input
AIM	Active Interface Module	Active Interface Module
ALM	Active Line Module	Active Line Module
AO	Analog Output	Analog output
AOP	Advanced Operator Panel	Advanced Operator Panel
APC	Advanced Positioning Control	Advanced positioning control
AR	Automatic Restart	Automatic restart
ASC	Armature Short-Circuit	Armature short-circuit
ASCII	American Standard Code for Information Interchange	American Standard Code for Information Interchange
ASM	Asynchronmotor	Induction motor
B		
BERO	-	Tradename for a type of contactless proximity switch
BI	Binector Input	Binector input
BIA	Berufsgenossenschaftliches Institut für Arbeitssicherheit	German Institute for Occupational Safety
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	CAN communication board

Abbreviation	Derivation of abbreviation	Meaning
CD	Compact Disc	Compact Disc
CDS	Command Data Set	Command data set
CF Card	CompactFlash Card	CompactFlash card
CI	Connector Input	Connector input
CLC	Clearance Control	Clearance control
CNC	Computer Numerical Control	Computer 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
COM	Common contact of a change-over relay	Common contact of a change-over relay
COMM	Commissioning	Commissioning
CP	Communications Processor	Communications processor
CPU	Central Processing Unit	Central processing unit
CRC	Cyclic Redundancy Check	Cyclic redundancy check
CSM	Control Supply Module	Control Supply Module
CU	Control Unit	Control Unit
D		
DAC	Digital Analog Converter	Digital Analog Converter
DC	Direct Current	Direct current
DCB	Drive Control Block	Drive Control Block
DCC	Drive Control Chart	Drive Control Chart
DCC	Data Cross-Check	Data cross-check
DCN	Direct Current Negative	Direct current negative
DCP	Direct Current Positive	Direct current positive
DDS	Drive Data Set	Drive data set
DI	Digital Input	Digital input
DI/DO	Digital Input/Digital Output	Bidirectional digital input/digital output
DMC	DRIVE-CLiQ Hub Module Cabinet	DRIVE-CLiQ Hub Module Cabinet
DME	DRIVE-CLiQ Hub Module External	DRIVE-CLiQ Hub Module External
DO	Digital Output	Digital output
DO	Drive Object	Drive object
DP	Distributed I/Os	Distributed I/Os
DPRAM	Dual-Port Random Access Memory	Dual-Port Random Access Memory
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
E		
EASC	External Armature Short-Circuit	External armature short-circuit
EDS	Encoder Data Set	Encoder data set
ELCB	Earth Leakage Circuit Breaker	Earth leakage circuit breaker
ELP	Earth Leakage Protection	Earth leakage protection

Abbreviation	Derivation of abbreviation	Meaning
EMC	Electromagnetic Compatibility	Electromagnetic compatibility
EMF	Electromagnetic Force	Electromagnetic force
EN	Europäische Norm	European Standard
EnDat	Encoder-Data-Interface	Encoder interface
EP	Enable Pulses	Enable Pulses
EPOS	Einfachpositionierer	Basic positioner
ES	Engineering System	Engineering system
ESB	Ersatzschaltbild	Equivalent circuit diagram
ESD	Electrostatic Sensitive Devices	Electrostatic sensitive devices
ESR	Extended Stop and Retract	Extended stop and retract
F		
F...	Fault	Fault
FAQ	Frequently Asked Questions	Frequently asked questions
FBL	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	Failsafe digital input
F-DO	Failsafe Digital Output	Failsafe digital output
FEM	Fremderregter Synchronmotor	Separate-field synchronous motor
FEPRM	Flash-EPROM	Non-volatile write and read memory
FG	Function Generator	Function generator
FI	-	Fault current
FO	Fiber-Optic Cable	Fiber optic cable
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 with 0 V (also designated as M)
GSD	Gerätestammdatei	Device master file: 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	High-frequency reactor
HMI	Human Machine Interface	Human Machine Interface
HTL	High-Threshold Logic	High-threshold logic

Abbreviation	Derivation of abbreviation	Meaning
HW	Hardware	Hardware
I		
I/O	Input/Output	Input/Output
I2C	Inter Integrated Circuit	Internal serial data bus
IASC	Internal Armature Short-Circuit	Internal armature short-circuit
ID	Identifier	Identifier
IEC	International Electrotechnical Commission	International standard in electrical engineering
IF	Interface	Interface
IGBT	Insulated Gate Bipolar Transistor	Bipolar transistor with insulated control electrode
IGCT	Integrated Gate-Controlled Thyristor	Semiconductor circuit-breaker with integrated control electrode
IL	Impulslöschung	Pulse suppression
IP	Internet Protocol	Internet Protocol
IPO	Interpolator	Interpolator
IT	Isolé Terré	Insulated three-phase supply system
IVP	Internal Voltage Protection	Internal voltage protection
J		
JOG	Jogging	Jogging
K		
KIP	Kinetische Pufferung	Kinetic buffering
Kp	-	Proportional gain
KTY	-	Special temperature sensor
L		
L	-	Formula symbol for inductance
LED	Light Emitting Diode	Light Emitting Diode
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
M		
M	-	Formula symbol for torque
M	Masse	Reference potential for all signal and operating voltages, usually defined with 0 V (also designated as GND)
MB	Megabyte	Megabyte
MCC	Motion Control Chart	Motion Control Chart
MDS	Motor Data Set	Motor data set
MLFB	Maschinenlesbare Fabrikatebezeichnung	Machine-readable product designation

Abbreviation	Derivation of abbreviation	Meaning
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
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)	Normally Closed (contact)
NC	Numerical Control	Numerical control
NEMA	National Electrical Manufacturers Association	Standards association in USA
NO	Normally Open (contact)	Normally Open (contact)
O		
OA	Open Architecture	Open Architecture
OC	Operating Condition	Operating condition
OEM	Original Equipment Manufacturer	Original Equipment Manufacturer
OLP	Optical Link Plug	Optical link plug
OMI	Option Module Interface	Option Module Interface
P		
p...	-	Setting parameter
PB	PROFIBUS	PROFIBUS
PcCtrl	PC Control	Master control
PD	PROFIdrive	PROFIdrive
PDS	Power unit Data Set	Power unit data set
PE	Protective Earth	Protective Earth
PELV	Protective Extra Low Voltage	Protective Extra Low Voltage
PEM	Permanenterregter Synchronmotor	Permanent-field synchronous motor
PG	Programmiergerät	Programming device
PI	Proportional Integral	Proportional Integral
PID	Proportional Integral Differential	Proportional Integral Differential
PLC	Programmable Logic Controller	Programmable logic controller
PLL	Phase-Locked Loop	Phase-Locked Loop
PN	PROFINET	PROFINET
PNO	PROFIBUS Nutzerorganisation	PROFIBUS User Organization (PROFIBUS International)
PPI	Point to Point Interface	Point to point interface
PRBS	Pseudo Random Binary Signal	Pseudo Random Binary Signal

Abbreviation	Derivation of abbreviation	Meaning
PROFIBUS	Process Field Bus	Serial data bus
PS	Power Supply	Power supply
PSA	Power Stack Adapter	Power stack adapter
PTC	Positive Temperature Coefficient	Positive Temperature Coefficient
PTP	Point-To-Point	Point-to-point
PWM	Pulse Width Modulation	Pulse width modulation
PZD	Prozessdaten	Process data
Q		
R		
r...	-	Display parameter (read only)
RAM	Random Access Memory	Read and write memory
RCCB	Residual Current Circuit Breaker	Residual current circuit breaker
RCD	Residual Current Device	Residual current device
RFG	Ramp-Function Generator	Ramp-function generator
RJ45	Registered Jack 45	Describes an 8-pole connector system for data transfer with shielded or unshielded multicore copper cables
RKA	Rückkühlanlage	Cooling unit
RO	Read Only	Read only
RPDO	Receive Process Data Object	Receive Process Data Object
RS232	Recommended Standard 232	Interface standard for conducted serial data transfer between a transmitter and a receiver (also designated as EIA232)
RS485	Recommended Standard 485	Interface standard for a conducted differential, parallel and/or serial bus system (data transfer between several transmitters and receivers, also designated as EIA485)
RTC	Real Time Clock	Real time clock
S		
S1	-	Continuous duty
S3	-	Intermittent duty
SBC	Safe Brake Control	Safe brake control
SBH	Sicherer Betriebshalt	Safe Operating Stop
SBR	-	Safe Acceleration Monitor
SCA	Safe Cam	Safe cam
SD Card	SecureDigital Card	Secure Digital Card
SE	Sicherer Software-Endschalter	Safe software limit switch
SG	Sicher reduzierte Geschwindigkeit	Safely reduced speed
SGA	Sicherheitsgerichteter Ausgang	Safety-related output
SGE	Sicherheitsgerichteter Eingang	Safety-related input
SH	Sicherer Halt	Safe standstill
SP	Safety Integrated	Safety Integrated
SIL	Safety Integrity Level	Safety Integrity Level

Abbreviation	Derivation of abbreviation	Meaning
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
SN	Sicherer Software-Nocken	Safe software cam
SOS	Safe Operating Stop	Safe operating stop
SP	Service Pack	Service pack
SPC	Setpoint Channel	Setpoint channel
SPI	Serial Peripheral Interface	Serial I/O interface
SS1	Safe Stop 1	Safe Stop 1 (time-monitored, ramp-monitored)
SS2	Safe Stop 2	Safe Stop 2
SSI	Synchronous Serial Interface	Synchronous serial interface
SSM	Safe Speed Monitor	Safe feedback from speed monitor ($n < n_x$)
SSR	Safe Stop Ramp	Safe brake ramp
STO	Safe Torque Off	Safely switched-off torque
STW	Steuerwort	Control word
SVA	Space-vector approximation	Space-vector approximation
T		
TB	Terminal Board	Terminal Board
TIA	Totally Integrated Automation	Totally Integrated Automation
TM	Terminal Module	Terminal Module
TN	Terre Neutre	Grounded three-phase supply system
Tn	-	Integral time
TPDO	Transmit Process Data Object	Transmit Process Data Object
TT	Terre Terre	Grounded three-phase supply system
TTL	Transistor-Transistor Logic	Transistor-Transistor-Logic
Tv	-	Derivative action time
U		
UL	Underwriters Laboratories Inc.	Underwriters Laboratories Inc.
UPS	Uninterruptible Power Supply	Uninterruptible power supply
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

Abbreviation	Derivation of abbreviation	Meaning
VPM	Voltage Protection Module	Voltage Protection Module
Vpp	Volt peak to peak	Volt peak to peak
VSM	Voltage Sensing Module	Voltage Sensing Module
W		
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

Index

B

Numbers

- 7200
 - General information, 3-126
- 7210
 - AND (AND function block with four inputs), 3-128
- 7212
 - OR (OR function block with four inputs), 3-129
- 7214
 - XOR (XOR function block with four inputs), 3-130
- 7216
 - NOT (inverter), 3-131
- 7220
 - ADD (adder with four inputs), 3-133
 - SUB (subtractor), 3-133
- 7222
 - MUL (multiplier), 3-134
 - DIV (divider), 3-134
- 7224
 - AVA (absolute value generator), 3-135
- 7230
 - MFP (pulse generator), PCL (pulse contractor), 3-137
- 7232
 - PDE (ON delay), PDF (OFF delay), 3-138
- 7234
 - PST (pulse stretcher), 3-139
- 7240
 - RSR (RS flip-flop), 3-141
 - DFR (D flip-flop), 3-141
- 7250
 - BSW (binary switch), NSW (numeric switch), 3-143

- 7260
 - LIM (limiter), 3-145
- 7262
 - PT1 (smoothing element), 3-146
- 7264
 - INT (integrator), 3-147
 - DIF (derivative-action element), 3-147
- 7270
 - LVM (double-sided threshold alarm with hysteresis), 3-149

A

- Access Level (Parameter), 2-48
- Acknowledgment
 - Adjustable, 4-158
 - Default, 4-158
 - IMMEDIATELY, 4-155
 - POWER ON, 4-155
 - PULSE INHIBIT, 4-155
- Activation
 - "Free blocks", 1-21
 - Individual free function blocks, 1-22
- Active (parameter, C1(x), C2(x), U, T), 2-47
- Address
 - Technical support, Preface-6
- Adjustable parameters, 2-45
- Aims of this manual, Preface-5
- Alarm value, 4-159
- Axxxx, 4-157

B

- BI, Binector Input, 2-46
- Binector
 - Input (BI), 2-46
 - Output (BO), 2-46
- Bit field (parameter), 2-51

Blocks

- ADD (adder), 1-28, 3-133
- AND, 1-26, 3-128
- AVA (absolute value generator), 1-30, 3-135
- BSW (binary switch), 1-36, 3-143
- DFR (D flip-flop), 1-35, 3-141
- DIF (derivative-action element), 1-40, 3-147
- DIV (divider), 1-29, 3-134
- INT (integrator), 1-39, 3-147
- LIM (limiter), 1-37, 3-145
- LVM (threshold alarm), 1-41, 3-149
- MFP (pulse generator), 1-30, 3-137
- MUL (multiplier), 1-29, 3-134
- NOT (inverter), 1-27, 3-131
- NSW (numeric switch), 1-36, 3-143
- OR, 1-26, 3-129
- PCL (pulse contractor), 1-31, 3-137
- PDE (ON delay), 1-32, 3-138
- PDF (OFF delay), 1-33, 3-138
- PST (pulse stretcher), 1-34, 3-139
- PT1 (smoothing element), 1-38, 3-146
- RSR (RS flip-flop), 1-34, 3-141
- SUB (subtractor), 1-28, 3-133
- XOR (exclusive OR), 1-27, 3-130

BO, Binector Output, 2-46

C

- C1(x) - Status commissioning unit, 2-47
- C2(x) - Status commissioning drive, 2-47
- Calculated (parameter), 2-47
- Changeable (parameter, C1(x), C2(x), U, T), 2-47
- CI, Connector Input, 2-46
- CO, Connector Output, 2-46
- CO/BO, Connector/Binector Output, 2-46
- Commissioning software, 1-21
- Computation time load, 1-23
- Connector
 - Input (CI), 2-46
 - Output (CO), 2-46
- Cxxxxx, 4-157

D

- Data Type (Parameter, signal source), 2-48
- DCBRAKE, 4-154
- Dependency (parameter), 2-51
- Description (Parameter), 2-50

Description of the function blocks, 1-26

Directory

- List of abbreviations, A-163
- Table of contents, function diagrams, 3-124

Display

- Alarms, 4-152
- Faults, 4-152

Display parameters, 2-45

DO, Drive Object, 2-46

Drive object, 2-46

E

ENCODER, 4-154

Example:

- interconnecting the input value, 1-17
- Interconnecting the output value, 1-18
- Interconnecting the PROFIBUS receive value (WORD), 1-19
- Interconnecting the PROFIBUS transmit word (DWORD), 1-20

Execution groups, 1-11

Execution sequence, 1-14

F

Factory setting, 2-50

Fault

- Acknowledgment, 4-155, 4-158
- Cause, 4-159
- Display, 4-152
- Explanation of list, 4-157
- Fault location, 4-158
- Fault reaction, 4-153, 4-158
- General information, 4-152
- How to distinguish a fault from an alarm, 4-152
- List of all faults, 4-160
- Message value, 4-158
- Name, 4-158
- Number, 4-157
- Range, 4-160
- Remedy, 4-159
- Save on POWER OFF, 4-156

Fault buffer

- Save on POWER OFF, 4-156

Fault value, 4-159

Fixed execution group, 1-11

Free execution group, 1-11

Free function blocks

- Characteristics, 1-10
- Configuration, 1-10
- Execution groups, 1-11
- Execution sequence, 1-14
- Field of applications, 1-10
- Operation, 1-10
- Range of modules, 1-15
- Sampling times, 1-12

Function (Parameter), 2-50

Function diagrams

- ADD (adder with four inputs),
SUB (subtractor), 3-133
- AND (AND function block with
four inputs), 3-128
- AVA (absolute value generator), 3-135
- BSW (binary switch), NSW (numeric
switch), 3-143
- General information, 3-126
- INT (integrator),
DIF (derivative-action element), 3-147
- LIM (limiter), 3-145
- LVM (double-sided threshold alarm
with hysteresis), 3-149
- MFP (pulse generator), PCL (pulse con-
tractor), 3-137
- MUL (multiplier),
DIV (divider), 3-134
- NOT (inverter), 3-131
- OR (OR function block with four inputs),
3-129
- PDE (ON delay), PDF (OFF delay), 3-138
- PST (pulse stretcher), 3-139
- PT1 (smoothing element), 3-146
- RSR (RS flip-flop),
DFR (D flip-flop), 3-141
- XOR (XOR function block with
four inputs), 3-130

Function module, 2-46

Fxxxx, 4-157

G

General information

- about faults and alarms, 4-152
- about parameters, 2-44

H

- Hardware sampling times, 1-12
- Hotline, Preface-6

I

IASC, 4-154

Index

- Factory setting, 2-50
- Parameters, 2-45, 2-50

L

Linked parameter, 2-45

List

- Abbreviations, A-163
- Faults and alarms, 4-160
- Message ranges, 4-160
- Parameters, all, 2-53
- Range of modules, 1-15
- List of abbreviations, A-163

M

Message value, 4-158

N

Name

- Fault, 4-158
- Parameters, 2-46
- WARNING, 4-158

NOTE

- Hotline, Preface-6
- Product information, Preface-6
- Technical support, Preface-6

Number

- Fault, 4-157
- Parameters, 2-45
- WARNING, 4-157

O

- Object, 2-46
- OFF1, 4-153
- OFF2, 4-153
- OFF3, 4-154

P

P group (parameter), 2-50
Parameters
 Access level, 2-48
 Calculated, 2-47
 Changeable in, 2-47
 Data type, 2-48
 Description, 2-50
 Dynamic index, 2-49
 Full name, 2-46
 Function, 2-50
 Index, 2-45, 2-50
 Linked parameter, 2-45
 List of all parameters, 2-53
 Name, 2-46
 Number, 2-45
 P group, 2-50
 Safety information, 2-52
 Short name, 2-46
 Unit, 2-50
 Unit group, 2-50
 Unit selection, 2-50
 Values, 2-50
Product information, Preface-6
pxxxx, 2-45

R

Range
 Alarms, 4-160
 Faults, 4-160
Range of modules, 1-15
Reaction to faults, 4-153
Resetting faults, 4-158
rxxxx, 2-45

S

Safety-related information (parameters), 2-52
Sampling times, 1-12

Search tools for manual, Preface-5
Software sampling times, 1-12
STARTER, 1-21
STOP1, 4-154
STOP2, 4-154
Support, Preface-6
Support request, Preface-6

T

T - Ready for operation, 2-47
Target group for this manual, Preface-5
Technical support, Preface-6

U

U - status Run, 2-47
Unit (Parameter), 2-50

V

Values (Parameter), 2-50
Version
 List of all parameters, 2-53
 List of faults and alarms, 4-160

W

WARNING
 Cause, 4-159
 Display, 4-152
 Explanation of list, 4-157
 Fault location, 4-158
 General information, 4-152
 How to distinguish an alarm from a fault,
 4-152
 List of all alarms, 4-160
 Message value, 4-158
 Name, 4-158
 Number, 4-157
 Range, 4-160
 Remedy, 4-159

Siemens AG
Industry Sector
Drive Technologies
Motion Control Systems
P.O. Box 3180
91050 ERLANGEN
GERMANY

www.siemens.com/motioncontrol

Subject to change without prior notice
© Siemens AG 2008