

Description of Device Parameters

Proline Promass 500

PROFIBUS PA

Coriolis flowmeter

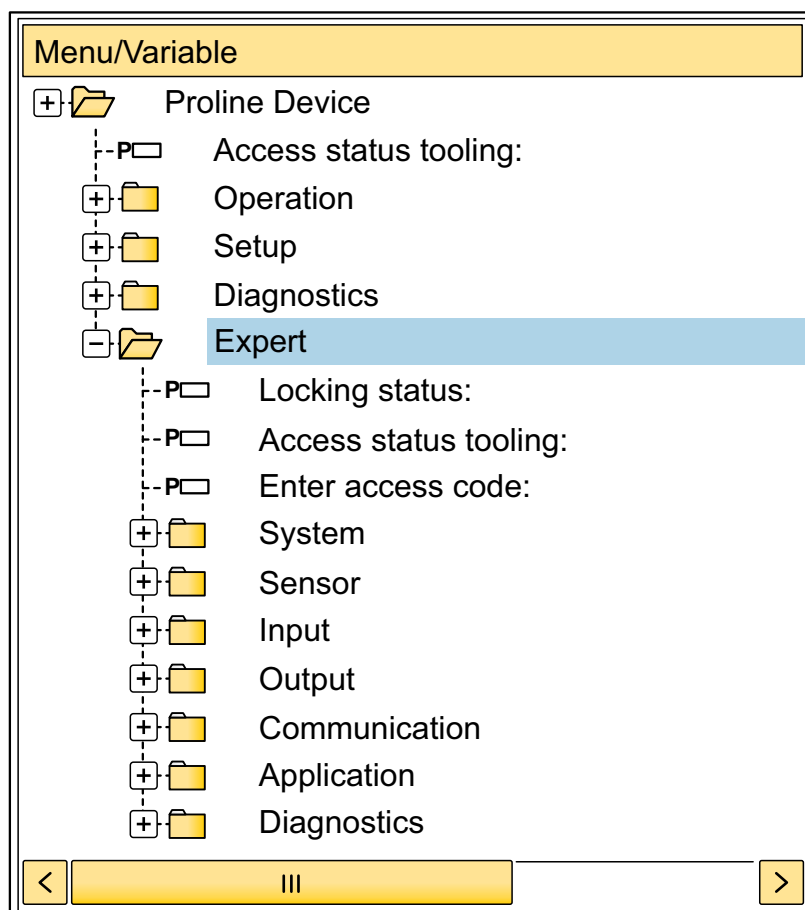


Table of contents

1	About this document	4		
1.1	Document function	4		
1.2	Target group	4		
1.3	Using this document	4		
1.3.1	Information on the document structure	4		
1.3.2	Structure of a parameter description	6		
1.4	Symbols used	6		
1.4.1	Symbols for certain types of information	6		
1.4.2	Symbols in graphics	7		
1.5	Documentation	7		
1.5.1	Standard documentation	7		
1.5.2	Supplementary device-dependent documentation	7		
2	Overview of the Expert operating menu	8		
3	Description of device parameters	11		
3.1	"System" submenu	13		
3.1.1	"Display" submenu	14		
3.1.2	"Configuration backup" submenu	28		
3.1.3	"Diagn. handling" submenu	31		
3.1.4	"Administration" submenu	40		
3.2	"Sensor" submenu	45		
3.2.1	"Measured val." submenu	46		
3.2.2	"System units" submenu	60		
3.2.3	"Process param." submenu	68		
3.2.4	"Measurement mode" submenu	76		
3.2.5	"External comp." submenu	78		
3.2.6	"Calculated value" submenu	81		
3.2.7	"Sensor adjustment" submenu	84		
3.2.8	"Calibration" submenu	91		
3.3	"I/O configuration" submenu	93		
3.4	"Input" submenu	95		
3.4.1	"Current input 1 to n" submenu	95		
3.4.2	"Status input 1 to n" submenu	98		
3.5	"Output" submenu	100		
3.5.1	"Current output 1 to n" submenu	101		
3.5.2	"Pulse/frequency/switch output 1 to n" submenu	115		
3.5.3	"Relay output 1 to n" submenu	137		
3.6	"Communication" submenu	143		
3.6.1	"PROFIBUS PA conf" submenu	144		
3.6.2	"PROFIBUS PA info" submenu	145		
3.6.3	"Physical block" submenu	147		
3.6.4	"Web server" submenu	156		
3.6.5	"WLAN settings" submenu	160		
3.7	"Analog inputs" submenu	166		
3.7.1	"Analog input 1 to n" submenu	167		
3.8	"Discrete inputs" submenu	181		
3.8.1	"Discrete input 1 to n" submenu	181		
3.9	"Analog outputs" submenu	188		
3.9.1	"Analog output 1 to n" submenu	188		
3.10	"Discrete outputs" submenu	200		
3.10.1	"Discrete output 1 to n" submenu	200		
3.11	"Application" submenu	210		
3.11.1	"Totalizer 1 to n" submenu	211		
3.11.2	"Viscosity" submenu	224		
3.11.3	"Concentration" submenu	224		
3.11.4	"Petroleum" submenu	224		
3.12	"Diagnostics" submenu	225		
3.12.1	"Diagnostic list" submenu	228		
3.12.2	"Event logbook" submenu	232		
3.12.3	"Device info" submenu	234		
3.12.4	"Main elec.+I/O1" submenu	238		
3.12.5	"Sens. electronic" submenu	239		
3.12.6	"I/O module 1" submenu	240		
3.12.7	"I/O module 2" submenu	240		
3.12.8	"Display module" submenu	242		
3.12.9	"Min/max val." submenu	243		
3.12.10	"Data logging" submenu	254		
3.12.11	"Heartbeat" submenu	263		
3.12.12	"Simulation" submenu	263		
4	Country-specific factory settings	274		
4.1	SI units	274		
4.1.1	System units	274		
4.1.2	Full scale values	274		
4.1.3	Output current span	275		
4.1.4	Pulse value	275		
4.1.5	On value low flow cut off	275		
4.2	US units	276		
4.2.1	System units	276		
4.2.2	Full scale values	277		
4.2.3	Output current span	277		
4.2.4	Pulse value	277		
4.2.5	On value low flow cut off	278		
5	Explanation of abbreviated units	280		
5.1	SI units	280		
5.2	US units	280		
5.3	Imperial units	282		
	Index	283		

1 About this document

1.1 Document function

The document is part of the Operating Instructions and serves as a reference for parameters, providing a detailed explanation of each individual parameter of the Expert operating menu.

It is used to perform tasks that require detailed knowledge of the function of the device:

- Commissioning measurements under difficult conditions
- Optimal adaptation of the measurement to difficult conditions
- Detailed configuration of the communication interface
- Error diagnostics in difficult cases

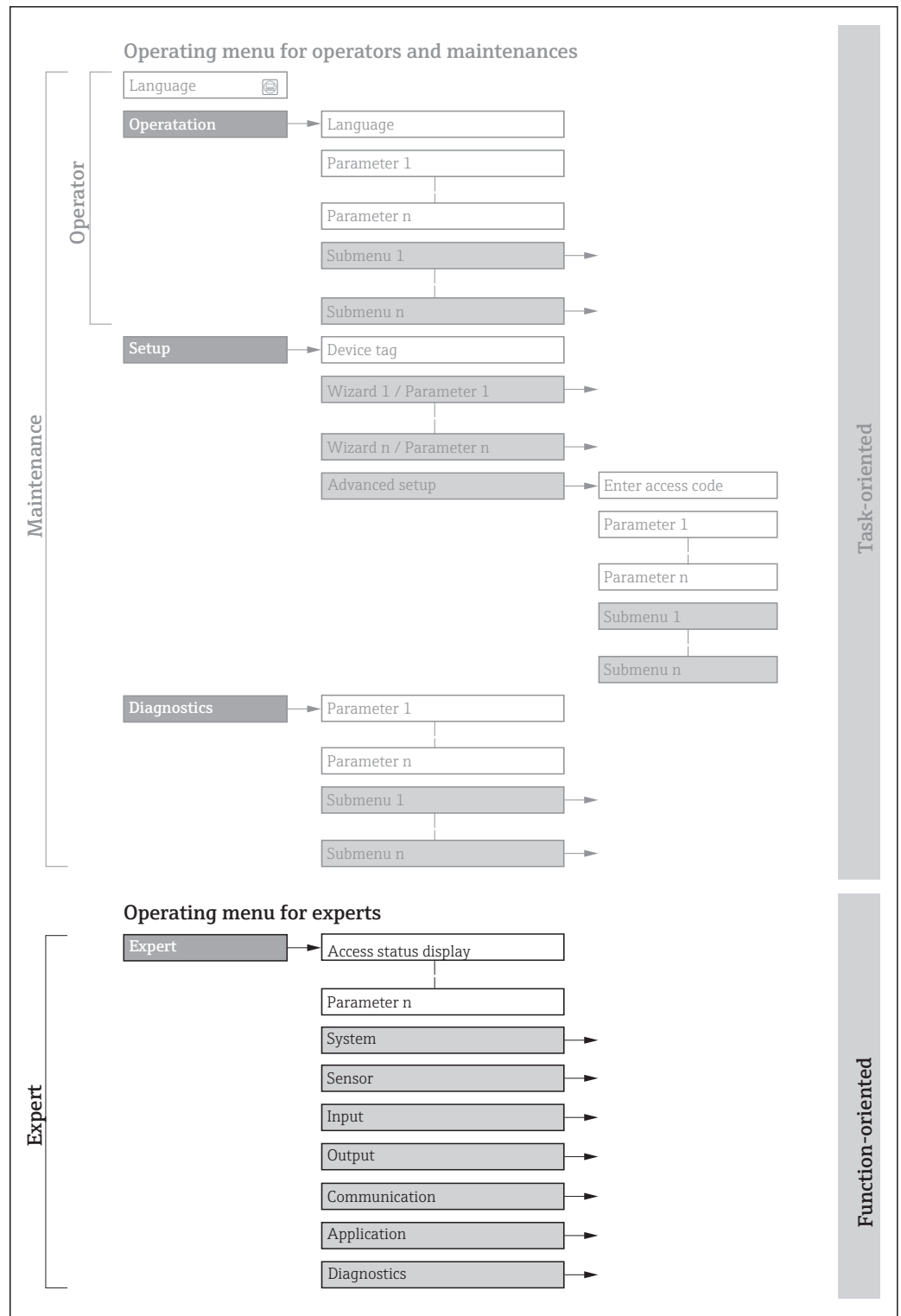
1.2 Target group

The document is aimed at specialists who work with the device over the entire life cycle and perform specific configurations.

1.3 Using this document

1.3.1 Information on the document structure

The document lists the submenus and their parameters according to the structure from the **Expert** menu (→  8), which is displayed when the **"Maintenance" user role** is enabled.



1 Sample graphic for the schematic layout of the operating menu



Additional information regarding:

- The arrangement of the parameters according to the menu structure of the **Operation** menu, **Setup** menu, **Diagnostics** menu with a brief description: Operating Instructions → 7
- Operating concept of the operating menus: Operating Instructions → 7

1.3.2 Structure of a parameter description

The individual parts of a parameter description are described in the following section:

Complete parameter name	Write-protected parameter 
Navigation	 Navigation path to the parameter via the local display (direct access code) or web browser  Navigation path to the parameter via the operating tool The names of the menus, submenus and parameters are abbreviated to the form in which they appear on the display and in the operating tool.
Prerequisite	The parameter is only available under these specific conditions
Description	Description of the parameter function
Selection	List of the individual options for the parameter ■ Option 1 ■ Option 2
User entry	Input range for the parameter
User interface	Display value/data for the parameter
Factory setting	Default setting ex works
Additional information	Additional explanations (e.g. in examples): ■ On individual options ■ On display values/data ■ On the input range ■ On the factory setting ■ On the parameter function

1.4 Symbols used

1.4.1 Symbols for certain types of information

Symbol	Meaning
	Tip Indicates additional information.
	Reference to documentation
	Reference to page
	Reference to graphic
	Operation via local display
	Operation via operating tool
	Write-protected parameter

1.4.2 Symbols in graphics

Symbol	Meaning	Symbol	Meaning
1, 2, 3 ...	Item numbers	A, B, C, ...	Views
A-A, B-B, C-C, ...	Sections		

1.5 Documentation

1.5.1 Standard documentation

Operating Instructions

Measuring device	Documentation code
Promass A 500 (8A5B**-...)	BA01548D
Promass A 500 (8A5C**-...)	BA01869D
Promass E 500	BA01550D
Promass F 500	BA01551D
Promass H 500	BA01552D
Promass I 500	BA01553D
Promass O 500	BA01554D
Promass P 500	BA01555D
Promass Q 500	BA01556D
Promass S 500	BA01557D
Promass X 500	BA01558D

1.5.2 Supplementary device-dependent documentation

Special Documentation

Contents	Documentation code
Information on the Pressure Equipment Directive	SD01614D
Radio approvals for WLAN interface for A309/A310 display module	SD01793D
Web server	SD01668D
Heartbeat Technology	SD01705D
Concentration measurement	SD01711D
Petroleum	SD02292D
Viscosity measurement Promass I	SD01725D

2 Overview of the Expert operating menu

The following table provides an overview of the menu structure of the expert operating menu and its parameters. The page reference indicates where the associated description of the submenu or parameter can be found.

Expert		
Direct access (0106)	→	11
Locking status (0004)	→	12
Access status (0005)	→	13
Ent. access code (0003)	→	13
▶ System	→	13
▶ Display	→	14
▶ Config. backup	→	28
▶ Diagn. handling	→	31
▶ Administration	→	40
▶ Sensor	→	45
▶ Measured val.	→	46
▶ System units	→	60
▶ Process param.	→	68
▶ Measurement mode	→	76
▶ External comp.	→	78
▶ Calculated value	→	81
▶ Sensor adjustm.	→	84
▶ Calibration	→	91
▶ I/O config.	→	93
I/O 1 to n terminals (3902-1 to n)	→	93
I/O 1 to n info (3906-1 to n)	→	93

I/O 1 to n type (3901-1 to n)	→ 94
Apply I/O config (3907)	→ 94
Alteration code (2762)	→ 95
► Input	→ 95
► Current input 1 to n	→ 95
► Status input 1 to n	→ 98
► Output	→ 100
► Curr.output 1 to n	→ 101
► PFS output 1 to n	→ 115
► Relay output 1 to n	→ 137
► Communication	→ 143
► PROFIBUS PA conf	→ 144
► PROFIBUS PA info	→ 145
► Physical block	→ 147
► Web server	→ 156
► WLAN settings	→ 160
► Analog inputs	→ 166
► Analog input 1 to n	→ 167
► Discrete inputs	→ 181
► Discrete input 1 to n	→ 181
► Analog outputs	→ 188
► Analog output 1 to n	→ 188
► Discrete outputs	→ 200
► Discr. out. 1 to n	→ 200

► Application	→ 210
► Totalizer 1 to n	→ 211
► Viscosity	→ 224
► Concentration	→ 224
► Diagnostics	→ 225
Actual diagnos. (0691)	→ 226
Prev.diagnostics (0690)	→ 226
Time fr. restart (0653)	→ 227
Operating time (0652)	→ 227
► Diagnostic list	→ 228
► Event logbook	→ 232
► Device info	→ 234
► Mainboard module	→ 238
► Sens. electronic	→ 239
► I/O module 1	→ 240
► I/O module 2	→ 240
► Display module	→ 242
► Min/max val.	→ 243
► Data logging	→ 254
► Heartbeat	→ 263
► Simulation	→ 263

3 Description of device parameters

In the following section, the parameters are listed according to the menu structure of the local display. Specific parameters for the operating tools are included at the appropriate points in the menu structure.

Expert		
Direct access (0106)	→	11
Locking status (0004)	→	12
Access status (0005)	→	13
Ent. access code (0003)	→	13
► System	→	13
► Sensor	→	45
► I/O config.	→	93
► Input	→	95
► Output	→	100
► Communication	→	143
► Analog inputs	→	166
► Discrete inputs	→	181
► Analog outputs	→	188
► Discrete outputs	→	200
► Application	→	210
► Diagnostics	→	225

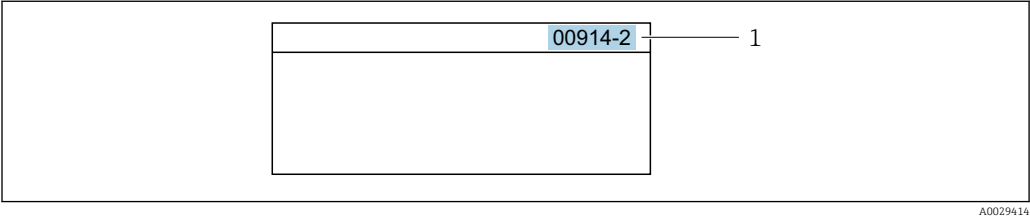
Direct access	
---------------	--

Navigation	Expert → Direct access (0106)
Description	Use this function to enter the access code to enable direct access to the desired parameter via the local display. A parameter number is assigned to each parameter for this purpose.
User entry	0 to 65 535

Additional information

User entry

The direct access code consists of a 5-digit number (at maximum) and the channel number, which identifies the channel of a process variable: e.g. 00914-2. In the navigation view, this appears on the right-hand side in the header of the selected parameter.



1 Direct access code

- Note the following when entering the direct access code:
- The leading zeros in the direct access code do not have to be entered.
Example: Enter "914" instead of "00914"
 - If no channel number is entered, channel 1 is accessed automatically.
Example: Enter 00914 → **Assign variable** parameter
 - If a different channel is accessed: Enter the direct access code with the corresponding channel number.
Example: Enter 00914-2 → **Assign variable** parameter

Locking status

Navigation

Expert → Locking status (0004)

Description

Displays the active write protection.

- User interface
- Hardware locked
 - Temp. locked

Additional information

Display

If two or more types of write protection are active, the write protection with the highest priority is shown on the local display. In the operating tool all active types of write protection are displayed.

Detailed information on access authorization is provided in the "User roles and associated access authorization" and "Operating concept" sections of the Operations Instructions for the device → 7

Selection

Options	Description
None	The access status displayed in the Access status parameter (→ 13) applies . Only appears on local display.
Hardware locked (priority 1)	The DIP switch for hardware locking is activated on the PCB board. This locks write access to the parameters (e.g. via local display or operating tool) .
Temp. locked (priority 2)	Write access to the parameters is temporarily locked on account of internal processes running in the device (e.g. data upload/download, reset etc.). Once the internal processing has been completed, the parameters can be changed once again.

Access status	
Navigation	 Expert → Access status (0005)
Description	Displays the access authorization to the parameters via the local display, Web browser or operating tool.
User interface	▪ Operator ▪ Maintenance
Factory setting	Maintenance
Additional information	<i>Description</i>  Access authorization can be modified via the Ent. access code parameter (→  13).  If additional write protection is active, this restricts the current access authorization even further. <i>Display</i>  Detailed information on access authorization is provided in the "User roles and associated access authorization" and "Operating concept" sections of the Operations Instructions for the device →  7

Ent. access code	
Navigation	 Expert → Ent. access code (0003)
Description	Use this function to enter the user-specific release code to remove parameter write protection.
User entry	0 to 9999

3.1 "System" submenu

Navigation  Expert → System

► System	
► Display	→  14
► Config. backup	→  28
► Diagn. handling	→  31
► Administration	→  40

3.1.1 "Display" submenu

Navigation

 Expert → System → Display

► Display		
Display language (0104)	→ 	15
Format display (0098)	→ 	15
Value 1 display (0107)	→ 	18
0% bargraph 1 (0123)	→ 	19
100% bargraph 1 (0125)	→ 	20
Decimal places 1 (0095)	→ 	20
Value 2 display (0108)	→ 	21
Decimal places 2 (0117)	→ 	21
Value 3 display (0110)	→ 	22
0% bargraph 3 (0124)	→ 	22
100% bargraph 3 (0126)	→ 	23
Decimal places 3 (0118)	→ 	23
Value 4 display (0109)	→ 	23
Decimal places 4 (0119)	→ 	24
Display interval (0096)	→ 	24
Display damping (0094)	→ 	25
Header (0097)	→ 	25
Header text (0112)	→ 	26
Separator (0101)	→ 	27
Contrast display (0105)	→ 	27
Backlight (0111)	→ 	27

Display language

Navigation	  Expert → System → Display → Display language (0104)
Prerequisite	A local display is provided.
Description	Use this function to select the configured language on the local display.
Selection	■ English ■ Deutsch ■ Français ■ Español ■ Italiano ■ Nederlands ■ Portuguesa ■ Polski ■ русский язык(Ru) ■ Svenska ■ Türkçe ■ 中文 (Chinese) ■ 日本語 (Japanese) ■ 한국어 (Korean) ■ Bahasa Indonesia ■ tiếng Việt (Vit) ■ čeština (Czech)
Factory setting	English (alternatively, the ordered language is preset in the device)

Format display

Navigation	  Expert → System → Display → Format display (0098)
Prerequisite	A local display is provided.
Description	Use this function to select how the measured value is shown on the local display.
Selection	■ 1 value, max. ■ Bargr. + 1 value ■ 2 values ■ Val. large+2val. ■ 4 values
Factory setting	1 value, max.

Additional information*Description*

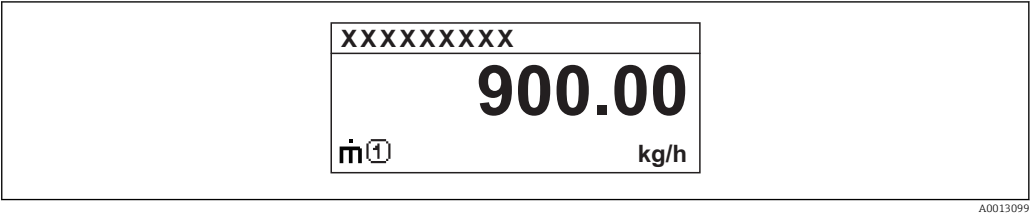
The display format (size, bar graph etc.) and number of measured values displayed simultaneously (1 to 4) can be configured. This setting only applies to normal operation.



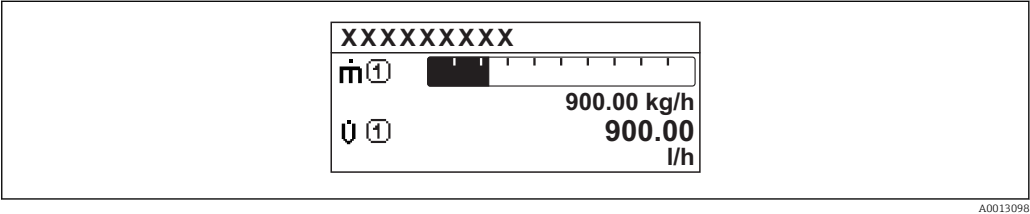
- The **Value 1 display** parameter (→ 18) to **Value 4 display** parameter (→ 23) are used to specify which measured values are shown on the local display and in what order.
- If more measured values are specified than the display mode selected permits, then the values alternate on the device display. The display time until the next change is configured via the **Display interval** parameter (→ 24).

Possible measured values shown on the local display:

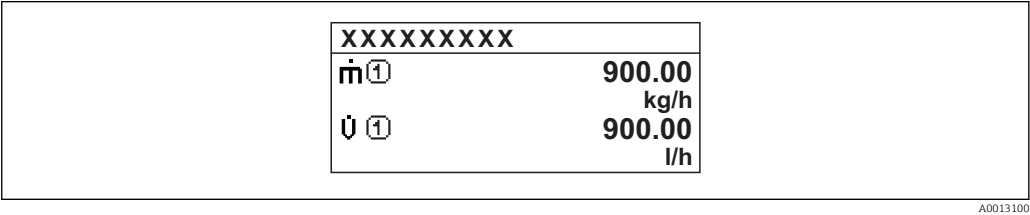
"1 value, max." option



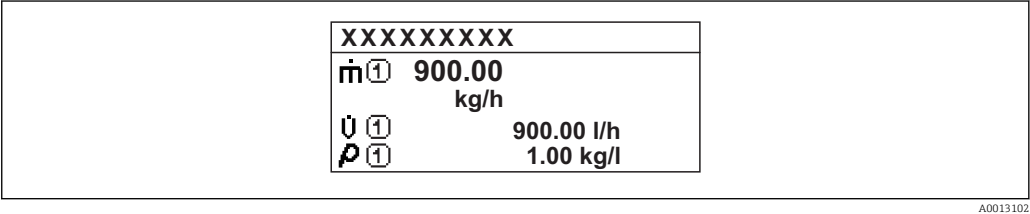
"Bargr. + 1 value" option



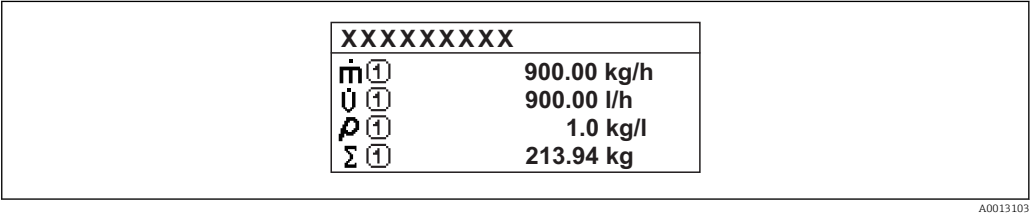
"2 values" option



"Val. large+2val." option



"4 values" option



Value 1 display

**Navigation**

Expert → System → Display → Value 1 display (0107)

Prerequisite

A local display is provided.

Description

Use this function to select one of the measured values to be shown on the local display.

Selection

- Mass flow
- Volume flow
- Correct.vol.flow *
- Target mass flow *
- Carrier mass fl. *
- Target vol. flow *
- Carrier vol. fl. *
- Targ.corr.vol.fl *
- Carr.corr.vol.fl *
- Density
- Ref.density *
- Ref.dens.altern. *
- GSV flow *
- GSVa *
- NSV flow *
- NSVa *
- S&W volume flow *
- Water cut *
- Oil density *
- Water density *
- Oil mass flow *
- Water mass flow *
- Oil volume flow *
- Water vol. flow *
- Oil corr.vol.fl. *
- Water corr.v.fl. *
- Density average *
- Temp. average *
- Concentration *
- Dynam. viscosity *
- Kinematic visc. *
- TempCompDynVisc *
- TempCompKinVisc *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. freq. 1 *
- Osc. ampl. 0 *
- Osc. ampl. 1 *
- Freq. fluct. 0 *
- Freq. fluct. 1 *
- Osc. damping 0 *
- Osc. damping 1 *
- Osc.damp.fluct 0 *
- Osc.damp.fluct 1 *
- Signal asymmetry *

* Visibility depends on order options or device settings

- Exc. current 0 *
- Exc. current 1 *
- HBSI *
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Curr.output 1 *
- Pressure

Factory setting

Mass flow

Additional information*Description*

If several measured values are displayed at once, the measured value selected here will be the first value to be displayed. The value is only displayed during normal operation.



The **Format display** parameter (→ 15) is used to specify how many measured values are displayed simultaneously and how.

Dependency

The unit of the displayed measured value is taken from the **System units** submenu (→ 60).

Selection

- **Oscil. frequency** option
Displays the current oscillation frequency of the measuring tubes. This frequency depends on the density of the medium.
- **Oscil. amplitude** option
Displays the relative oscillation amplitude of the measuring tubes in relation to the preset value. This value is 100 % under optimum conditions.
- **Oscil. damping** option
Displays the current oscillation damping. Oscillation damping is an indicator of the sensor's current need for excitation power.
- **Signal asymmetry** option
Displays the relative difference between the oscillation amplitude at the inlet and outlet of the sensor. The measured value is the result of production tolerances of the sensor coils and should remain constant over the life time of a sensor.

0% bargraph 1**Navigation**

Expert → System → Display → 0% bargraph 1 (0123)

Prerequisite

A local display is provided.

Description

Use this function to enter the 0% bar graph value to be shown on the display for the measured value 1.

User entry

Signed floating-point number

Factory setting

Country-specific:

- 0 kg/h
- 0 lb/min

* Visibility depends on order options or device settings

Additional information	<i>Description</i>  The Format display parameter (→  15) is used to specify that the measured value is to be displayed as a bar graph. <i>User entry</i>  The unit of the displayed measured value is taken from the System units submenu (→  60).
-------------------------------	---

100% bargraph 1	
------------------------	---

Navigation	  Expert → System → Display → 100% bargraph 1 (0125)
Prerequisite	A local display is provided.
Description	Use this function to enter the 100% bar graph value to be shown on the display for the measured value 1.
User entry	Signed floating-point number
Factory setting	Depends on country and nominal diameter →  274
Additional information	<i>Description</i>  The Format display parameter (→  15) is used to specify that the measured value is to be displayed as a bar graph. <i>User entry</i>  The unit of the displayed measured value is taken from the System units submenu (→  60).

Decimal places 1	
-------------------------	---

Navigation	  Expert → System → Display → Decimal places 1 (0095)
Prerequisite	A measured value is specified in the Value 1 display parameter (→  18).
Description	Use this function to select the number of decimal places for measured value 1.
Selection	■ x ■ x.x ■ x.xx ■ x.xxx ■ x.xxxx
Factory setting	x.xx

Additional information*Description*

This setting does not affect the measuring or computational accuracy of the device. The arrow displayed between the measured value and the unit indicates that the device computes with more digits than are shown on the local display.

Value 2 display**Navigation**

Expert → System → Display → Value 2 display (0108)

Prerequisite

A local display is provided.

Description

Use this function to select one of the measured values to be shown on the local display.

Selection

For the picklist, see the **Value 1 display** parameter (→ 18)

Factory setting

None

Additional information*Description*

If several measured values are displayed at once, the measured value selected here will be the second value to be displayed. The value is only displayed during normal operation.



The **Format display** parameter (→ 15) is used to specify how many measured values are displayed simultaneously and how.

Dependency

The unit of the displayed measured value is taken from the **System units** submenu (→ 60).

Decimal places 2**Navigation**

Expert → System → Display → Decimal places 2 (0117)

Prerequisite

A measured value is specified in the **Value 2 display** parameter (→ 21).

Description

Use this function to select the number of decimal places for measured value 2.

Selection

- x
- x.x
- x.xx
- x.xxx
- x.xxxx

Factory setting

x.xx

Additional information*Description*

This setting does not affect the measuring or computational accuracy of the device. The arrow displayed between the measured value and the unit indicates that the device computes with more digits than are shown on the local display.

Value 3 display 	
Navigation	 Expert → System → Display → Value 3 display (0110)
Prerequisite	A local display is provided.
Description	Use this function to select one of the measured values to be shown on the local display.
Selection	For the picklist, see the Value 1 display parameter (→  18)
Factory setting	None
Additional information	<i>Description</i>
	If several measured values are displayed at once, the measured value selected here will be the third value to be displayed. The value is only displayed during normal operation.
	 The Format display parameter (→  15) is used to specify how many measured values are displayed simultaneously and how.
	<i>Selection</i>
	 The unit of the displayed measured value is taken from the System units submenu (→  60).
0% bargraph 3 	
Navigation	 Expert → System → Display → 0% bargraph 3 (0124)
Prerequisite	A selection was made in the Value 3 display parameter (→  22).
Description	Use this function to enter the 0% bar graph value to be shown on the display for the measured value 3.
User entry	Signed floating-point number
Factory setting	Country-specific: ■ 0 kg/h ■ 0 lb/min
Additional information	<i>Description</i>
	 The Format display parameter (→  15) is used to specify that the measured value is to be displayed as a bar graph.
	<i>User entry</i>
	 The unit of the displayed measured value is taken from the System units submenu (→  60).

100% bargraph 3 	
Navigation	  Expert → System → Display → 100% bargraph 3 (0126)
Prerequisite	A selection was made in the Value 3 display parameter (→  22).
Description	Use this function to enter the 100% bar graph value to be shown on the display for the measured value 3.
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Description</i>
	 The Format display parameter (→  15) is used to specify that the measured value is to be displayed as a bar graph.
	<i>User entry</i>
	 The unit of the displayed measured value is taken from the System units submenu (→  60).
Decimal places 3 	
Navigation	  Expert → System → Display → Decimal places 3 (0118)
Prerequisite	A measured value is specified in the Value 3 display parameter (→  22).
Description	Use this function to select the number of decimal places for measured value 3.
Selection	■ x ■ x.x ■ x.xx ■ x.xxx ■ x.xxxx
Factory setting	x.xx
Additional information	<i>Description</i>
	 This setting does not affect the measuring or computational accuracy of the device. The arrow displayed between the measured value and the unit indicates that the device computes with more digits than are shown on the local display.
Value 4 display 	
Navigation	  Expert → System → Display → Value 4 display (0109)
Prerequisite	A local display is provided.

Description	Use this function to select one of the measured values to be shown on the local display.
Selection	For the picklist, see the Value 1 display parameter (→  18)
Factory setting	None
Additional information	<i>Description</i> If several measured values are displayed at once, the measured value selected here will be the fourth value to be displayed. The value is only displayed during normal operation.  The Format display parameter (→  15) is used to specify how many measured values are displayed simultaneously and how. <i>Selection</i>  The unit of the displayed measured value is taken from the System units submenu (→  60).

Decimal places 4

Navigation	  Expert → System → Display → Decimal places 4 (0119)
Prerequisite	A measured value is specified in the Value 4 display parameter (→  23).
Description	Use this function to select the number of decimal places for measured value 4.
Selection	■ X ■ X.X ■ X.XX ■ X.XXX ■ X.XXXX
Factory setting	X.XX
Additional information	<i>Description</i>  This setting does not affect the measuring or computational accuracy of the device. The arrow displayed between the measured value and the unit indicates that the device computes with more digits than are shown on the local display.

Display interval

Navigation	  Expert → System → Display → Display interval (0096)
Prerequisite	A local display is provided.
Description	Use this function to enter the length of time the measured values are displayed if the values alternate on the display.
User entry	1 to 10 s

Factory setting 5 s

Additional information *Description*

This type of alternating display only occurs automatically if the number of measured values defined exceeds the number of values the selected display format can display simultaneously.



- The **Value 1 display** parameter (→ 18) to **Value 4 display** parameter (→ 23) are used to specify which measured values are shown on the local display.
- The display format of the displayed measured values is specified using the **Format display** parameter (→ 15).

Display damping

Navigation Expert → System → Display → Display damping (0094)

Prerequisite A local display is provided.

Description Use this function to enter a time constant for the reaction time of the local display to fluctuations in the measured value caused by process conditions.

User entry 0.0 to 999.9 s

Factory setting 0.0 s

Additional information *User entry*

Use this function to enter a time constant (PT1 element ¹⁾) for display damping:

- If a low time constant is entered, the display reacts particularly quickly to fluctuating measured variables.
- On the other hand, the display reacts more slowly if a high time constant is entered.



Damping is switched off if **0** is entered (factory setting).

Header

Navigation Expert → System → Display → Header (0097)

Prerequisite A local display is provided.

Description Use this function to select the contents of the header of the local display.

Selection

- Device tag
- Free text

Factory setting Device tag

¹⁾ proportional transmission behavior with first order delay

Additional information	Description The header text only appears during normal operation. 1 XXXXXXXXXX A0029422 1 Position of the header text on the display Selection ■ Device tag Is defined in the Device tag parameter (→ ⓘ 235). ■ Free text Is defined in the Header text parameter (→ ⓘ 26).
------------------------	---

Header text

ⓘ

Navigation	🔍📄 Expert → System → Display → Header text (0112)
Prerequisite	In the Header parameter (→ ⓘ 25), the Free text option is selected.
Description	Use this function to enter a customer-specific text for the header of the local display.
User entry	Max. 12 characters such as letters, numbers or special characters (e.g. @, %, /)
Factory setting	-----
Additional information	Description The header text only appears during normal operation. 1 XXXXXXXXXX A0029422 1 Position of the header text on the display User entry The number of characters displayed depends on the characters used.

Separator		
Navigation	  Expert → System → Display → Separator (0101)	
Prerequisite	A local display is provided.	
Description	Use this function to select the decimal separator.	
Selection	■ . (point) ■ , (comma)	
Factory setting	. (point)	
Contrast display		
Navigation	  Expert → System → Display → Contrast display (0105)	
Prerequisite	A local display is provided.	
Description	Use this function to enter a value to adapt the display contrast to the ambient conditions (e.g. the lighting or viewing angle).	
User entry	20 to 80 %	
Factory setting	Depends on the display	
Backlight		
Navigation	  Expert → System → Display → Backlight (0111)	
Prerequisite	One of the following conditions is met: ■ Order code for "Display; operation", option F "4-line, illum.; touch control" ■ Order code for "Display; operation", option G "4-line, illum.; touch control +WLAN"	
Description	Use this function to switch the backlight of the local display on and off.	
Selection	■ Disable ■ Enable	
Factory setting	Enable	

3.1.2 "Configuration backup" submenu

Navigation  Expert → System → Config. backup

► Config. backup		
Operating time	→ 	28
Last backup	→ 	28
Config. managem.	→ 	28
Backup state	→ 	29
Compar. result	→ 	30

Operating time

Navigation	 Expert → System → Config. backup → Operating time (0652)
Description	Use this function to display the length of time the device has been in operation.
User interface	Days (d), hours (h), minutes (m) and seconds (s)
Additional information	<i>User interface</i> The maximum number of days is 9999, which is equivalent to 27 years.

Last backup

Navigation	 Expert → System → Config. backup → Last backup (2757)
Description	Displays the time since a backup copy of the data was last saved to the device memory.
User interface	Days (d), hours (h), minutes (m) and seconds (s)

Config. managem.

Navigation	 Expert → System → Config. backup → Config. managem. (2758)
Description	Use this function to select an action to save the data to the device memory.

- Selection**
- Cancel
 - Execute backup
 - Restore *
 - Compare *
 - Clear backup

Factory setting Cancel

Additional information *Selection*

Options	Description
Cancel	No action is executed and the user exits the parameter.
Execute backup	A backup copy of the current device configuration is saved from the HistoROM backup to the memory of the device. The backup copy includes the transmitter data of the device. The following message appears on local display: Backup active, please wait!
Restore	The last backup copy of the device configuration is restored from the device memory to the device's HistoROM backup. The backup copy includes the transmitter data of the device. The following message appears on local display: Restore active! Do not interrupt power supply!
Compare	The device configuration saved in the device memory is compared with the current device configuration of the HistoROM backup. The following message appears on local display: Comparing files The result can be viewed in Compar. result parameter.
Clear backup	The backup copy of the device configuration is deleted from the memory of the device. The following message appears on local display: Deleting file

HistoROM

A HistoROM is a "non-volatile" device memory in the form of an EEPROM.

Backup state

Navigation  Expert → System → Config. backup → Backup state (2759)

Description Displays the status of the data backup process.

- User interface**
- None
 - Backup in progr.
 - Restore in progr.
 - Delete in progr.
 - Comp. in progr.
 - Restoring failed
 - Backup failed

Factory setting None

* Visibility depends on order options or device settings

Compar. result

Navigation
 Expert → System → Config. backup → Compar. result (2760)
Description

Displays the last result of the comparison of the data records in the device memory and in the HistoROM.

User interface

- Set. identical
- Set. not ident.
- No backup
- Backup corrupt
- Check not done
- Dataset incomp.

Factory setting

Check not done

Additional information*Description*

 The comparison is started via the **Compare** option in the **Config. managem.** parameter (→  28).

Selection

Options	Description
Set. identical	The current device configuration of the HistoROM is identical to the backup copy in the device memory. If the transmitter configuration of another device has been transmitted to the device via HistoROM in the Config. managem. parameter, the current device configuration of the HistoROM is only partially identical to the backup copy in the device memory: The settings for the transmitter are not identical.
Set. not ident.	The current device configuration of the HistoROM is not identical to the backup copy in the device memory.
No backup	There is no backup copy of the device configuration of the HistoROM in the device memory.
Backup corrupt	The current device configuration of the HistoROM is corrupt or not compatible with the backup copy in the device memory.
Check not done	The device configuration of the HistoROM has not yet been compared to the backup copy in the device memory.
Dataset incomp.	The backup copy in the device memory is not compatible with the device.

HistoROM

A HistoROM is a "non-volatile" device memory in the form of an EEPROM.

3.1.3 "Diagn. handling" submenu

Navigation  Expert → System → Diagn. handling

▶ Diagn. handling		
Alarm delay (0651)		→  31
▶ Diagn. behavior		→  31

Alarm delay



Navigation

 Expert → System → Diagn. handling → Alarm delay (0651)

Description

Use this function to enter the time interval until the device generates a diagnostic message.

 The diagnostic message is reset without a time delay.

User entry

0 to 60 s

Factory setting

0 s

Additional information

Result

This setting affects the following diagnostic messages:

- 046 Sensor limit
- 140 Sensor sig.asym.
- 144 MeasErrorTooHigh
- 830 Sensor temp.
- 831 Sensor temp.
- 832 Electronic temp.
- 833 Electronic temp.
- 834 Process temp.
- 835 Process temp.
- 843 Process limit
- 862 Partly filled
- 912 Medium inhomog.
- 913 Medium unsuitab.
- 944 MonitoringFailed

"Diagn. behavior" submenu

Each item of diagnostic information is assigned a specific diagnostic behavior at the factory. The user can change this assignment for specific diagnostic information in the **Diagn. behavior** submenu (→  31).

The following options are available in the **Assign behavior of diagnostic no. xxx** parameters:

Diagnostic behavior	Description
Alarm	The device stops measurement. The totalizers assume the defined alarm condition. A diagnostic message is generated.
Warning	The device continues to measure. The measured value output via PROFIBUS and the totalizers are not affected. A diagnostic message is generated.
Logbook only	The device continues to measure. The diagnostic message is displayed only in the Event logbook submenu (→  232) (Event list submenu (→  233)) and not in alternation with the operational display.
Off	The diagnostic event is ignored, and no diagnostic message is generated or entered.

 For a list of all the diagnostic events, see the Operating Instructions for the device →  7

Navigation   Expert → System → Diagn. handling → Diagn. behavior

► Diagn. behavior		
Diagnostic no. 046 (0709)		→  33
Diagnostic no. 140 (0708)		→  33
Diagnostic no. 144 (0731)		→  34
Diagnostic no. 374 (0710)		→  34
Diagnostic no. 302 (0739)		→  34
Diagnostic no. 441 (0657)		→  35
Diagnostic no. 442 (0658)		→  35
Diagnostic no. 443 (0659)		→  35
Diagnostic no. 444 (0740)		→  36
Diagnostic no. 830 (0800)		→  36
Diagnostic no. 831 (0641)		→  36
Diagnostic no. 832 (0681)		→  37
Diagnostic no. 833 (0682)		→  37
Diagnostic no. 834 (0700)		→  38
Diagnostic no. 835 (0702)		→  38

Diagnostic no. 842 (0638)	→  38
Diagnostic no. 862 (0679)	→  39
Diagnostic no. 912 (0703)	→  39
Diagnostic no. 913 (0712)	→  39
Diagnostic no. 944 (0732)	→  40
Diagnostic no. 948 (0744)	→  40

Diagnostic no. 046 (Sensor limit)

Navigation	  Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 046 (0709)
Description	Option for changing the diagnostic behavior of the diagnostic message 046 Sensor limit .
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Alarm
Additional information	 Detailed description of the options available for selection:

Diagnostic no. 140 (Sensor sig.asym.)

Navigation	  Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 140 (0708)
Description	Option for changing the diagnostic behavior of the diagnostic message 140 Sensor sig.asym..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Alarm
Additional information	 Detailed description of the options available for selection:

Diagnostic no. 144 (MeasErrorTooHigh)

Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 144 (0731)
Description	Option for changing the diagnostic behavior of the diagnostic message 144 MeasErrorTooHigh .
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Alarm
Additional information	Detailed description of the options available for selection:

Diagnostic no. 374 (Sensor electron.)

Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 374 (0710)
Description	Option for changing the diagnostic behavior of the diagnostic message 374 Sensor electron..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	Detailed description of the options available for selection:

Diagnostic no. 302 (Verific. active)

Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 302 (0739)
Description	Option for changing the diagnostic behavior of the diagnostic message 302 Verific. active .
Selection	■ Alarm ■ Warning
Factory setting	Warning
Additional information	Detailed description of the options available for selection:

Diagnostic no. 441 (Curr.output 1 to n)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 441 (0657)
Description	Option for changing the diagnostic behavior of the diagnostic message 441 Curr.output 1 to n .
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	Detailed description of the options available for selection:

Diagnostic no. 442 (Freq. output 1 to n)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 442 (0658)
Prerequisite	The measuring device has a pulse/frequency/switch output.
Description	Option for changing the diagnostic behavior of the diagnostic message 442 Freq. output 1 to n .
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	Detailed description of the options available for selection:

Diagnostic no. 443 (Pulse output 1 to n)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 443 (0659)
Prerequisite	The measuring device has a pulse/frequency/switch output.
Description	Option for changing the diagnostic behavior of the diagnostic message 443 Pulse output 1 to n .
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only

Factory setting

Warning

Additional information

Detailed description of the options available for selection:

Diagnostic no. 444 (Current input 1 to n)**Navigation**

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 444 (0740)

Prerequisite

The device has one current input.

DescriptionOption for changing the diagnostic behavior of the diagnostic message **444 Current input 1 to n**.**Selection**

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information

Detailed description of the options available for selection:

Diagnostic no. 830 (Sensor temp.)**Navigation**

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 830 (0800)

DescriptionOption for changing the diagnostic behavior of the diagnostic message **830 Sensor temp..****Selection**

- Off
- Alarm
- Warning
- Logbook only

Factory setting

Warning

Additional information

Detailed description of the options available for selection:

Diagnostic no. 831 (Sensor temp.)**Navigation**

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 831 (0641)

DescriptionOption for changing the diagnostic behavior of the diagnostic message **831 Sensor temp..**

Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	 Detailed description of the options available for selection:

Diagnostic no. 832 (Electronic temp.)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 832 (0681)
Description	Option for changing the diagnostic behavior of the diagnostic message 832 Electronic temp..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Logbook only
Additional information	 Detailed description of the options available for selection:

Diagnostic no. 833 (Electronic temp.)

Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 833 (0682)
Description	Option for changing the diagnostic behavior of the diagnostic message 833 Electronic temp..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Logbook only
Additional information	 Detailed description of the options available for selection:

Diagnostic no. 834 (Process temp.)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 834 (0700)
Description	Option for changing the diagnostic behavior of the diagnostic message 834 Process temp..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	Detailed description of the options available for selection:

Diagnostic no. 835 (Process temp.)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 835 (0702)
Description	Option for changing the diagnostic behavior of the diagnostic message 835 Process temp..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	Detailed description of the options available for selection:

Diagnostic no. 842 (Process limit)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 842 (0638)
Description	Option for changing the diagnostic behavior of the diagnostic message Process limit.
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Off

Diagnostic no. 862 (Empty pipe)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 862 (0679)
Description	Option for changing the diagnostic behavior of the diagnostic message 862 Empty pipe .
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	Detailed description of the options available for selection:

Diagnostic no. 912 (Medium inhomog.)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 912 (0703)
Description	Option for changing the diagnostic behavior of the diagnostic message 912 Medium inhomog..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	Detailed description of the options available for selection:

Diagnostic no. 913 (Medium unsuitab.)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 913 (0712)
Description	Option for changing the diagnostic behavior of the diagnostic message 913 Medium unsuitab..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	Detailed description of the options available for selection:

Diagnostic no. 944 (MonitoringFailed)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 944 (0732)
Description	Option for changing the diagnostic behavior of the diagnostic message 944 MonitoringFailed.
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	Detailed description of the options available for selection:

Diagnostic no. 948 (Oscill. damping)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 948 (0744)
Description	Option for changing the diagnostic behavior of the diagnostic message 948 Oscill. damping.
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
Factory setting	Warning
Additional information	Detailed description of the options available for selection:

3.1.4 "Administration" submenu

Navigation Expert → System → Administration

► Administration	
► Def. access code	→ 41
► Reset acc. code	→ 42
Device reset (0000)	→ 43

Activate SW opt. (0029)	→ 44
SW option overv. (0015)	→ 45

"Def. access code" wizard

 The **Def. access code** wizard (→ 41) is only available when operating via the local display or Web browser.

If operating via the operating tool, the **Def. access code** parameter can be found directly in the **Administration** submenu. There is no **Confirm code** parameter if the device is operated via the operating tool.

Navigation  Expert → System → Administration → Def. access code

► Def. access code	
Def. access code	→ 41
Confirm code	→ 42

Def. access code

Navigation	  Expert → System → Administration → Def. access code → Def. access code
Description	Use this function to enter a user-specific release code to restrict write-access to the parameters. This protects the device configuration against any inadvertent modifications via the local display, Web browser, FieldCare or DeviceCare (via CDI-RJ45 service interface).
User entry	Max. 16-digit character string comprising numbers, letters and special characters
Additional information	<i>Description</i> The write protection affects all parameters in the document marked with the  symbol. On the local display, the  symbol in front of a parameter indicates that the parameter is write-protected. The parameters that cannot be write-accessed are grayed out in the Web browser.  Once the access code has been defined, write-protected parameters can only be modified if the access code is entered in the Ent. access code parameter (→ 13).  If you lose the access code, please contact your Endress+Hauser sales organization. <i>User entry</i> A message is displayed if the access code is not in the input range. <i>Factory setting</i> If the factory setting is not changed or 0 is defined as the access code, the parameters are not write-protected and the device configuration data can be modified. The user is logged on in the "Maintenance" role.

Confirm code

Navigation	  Expert → System → Administration → Def. access code → Confirm code
Description	Enter the defined release code a second time to confirm the release code.
User entry	Max. 16-digit character string comprising numbers, letters and special characters

"Reset access code" submenu

Navigation   Expert → System → Administration → Reset acc. code

▶ Reset acc. code

Operating time (0652)

→  42

Reset acc. code (0024)

→  42

Operating time

Navigation	  Expert → System → Administration → Reset acc. code → Operating time (0652)
Description	Use this function to display the length of time the device has been in operation.
User interface	Days (d), hours (h), minutes (m) and seconds (s)
Additional information	<i>User interface</i> The maximum number of days is 9999, which is equivalent to 27 years.

Reset acc. code

Navigation	  Expert → System → Administration → Reset acc. code → Reset acc. code (0024)
Description	Use this function to enter a reset code to reset the user-specific release code to the factory setting.
User entry	Character string comprising numbers, letters and special characters
Factory setting	0x00

Additional information*Description*

For a reset code, contact your Endress+Hauser service organization.

User entry

The reset code can only be entered via:

- Web browser
- DeviceCare, FieldCare (via interface CDI RJ45)
- Fieldbus

Additional parameters in the "Administration" submenu**Device reset****Navigation**

Expert → System → Administration → Device reset (0000)

Description

Use this function to choose whether to reset the device configuration - either entirely or in part - to a defined state.

Selection

- Cancel
- To delivery set.
- Restart device
- Rest.S-DATBackup *

Factory setting

Cancel

Additional information*Selection*

Options	Description
Cancel	No action is executed and the user exits the parameter.
To delivery set.	Every parameter for which a customer-specific default setting was ordered is reset to this customer-specific value. All other parameters are reset to the factory setting.
Restart device	The restart resets every parameter whose data are in the volatile memory (RAM) to the factory setting (e.g. measured value data). The device configuration remains unchanged.
Rest.S-DATBackup	Restore the data that are saved on the S-DAT. The data record is restored from the electronics memory to the S-DAT. This option is displayed only in an alarm condition.

* Visibility depends on order options or device settings

Activate SW opt.	
Navigation	Expert → System → Administration → Activate SW opt. (0029)
Description	Use this function to enter an activation code to enable an additional, ordered software option.
User entry	Max. 10-digit string consisting of numbers.
Factory setting	Depends on the software option ordered
Additional information	<i>Description</i> If a measuring device was ordered with an additional software option, the activation code is programmed in the device at the factory. <i>User entry</i> To activate a software option subsequently, please contact your Endress+Hauser sales organization. NOTE! The activation code is linked to the serial number of the measuring device and varies according to the device and software option. If an incorrect or invalid code is entered, this results in the loss of software options that have already been activated. ▶ Before you enter a new activation code, make a note of the current activation code . ▶ Enter the new activation code provided by Endress+Hauser when the new software option was ordered. ▶ Once the activation code has been entered, check if the new software option is displayed in the SW option overv. parameter (→ 45). ↳ The new software option is active if it is displayed. ↳ If the new software option is not displayed or all software options have been deleted, the code entered was either incorrect or invalid. ▶ If the code entered is incorrect or invalid, enter the old activation code . ▶ Have your Endress+Hauser sales organization check the new activation code remembering to specify the serial number or ask for the code again. <i>Example for a software option</i> Order code for "Application package", option EA "Extended HistoROM" The software options currently enabled are displayed in the SW option overv. parameter (→ 45). <i>Web browser</i> Once a software option has been activated, the page must be loaded again in the Web browser.

SW option overv.

Navigation	 Expert → System → Administration → SW option overv. (0015)
Description	Displays all the software options that are enabled in the device.
User interface	■ Extend. HistoROM[*] ■ HBT Monitoring[*] ■ HBT Verification[*] ■ Concentration[*] ■ Petroleum[*] ■ Viscosity[*]
Additional information	<i>Description</i> Displays all the options that are available if ordered by the customer. <i>"Extend. HistoROM" option</i> Order code for "Application package", option EA "Extended HistoROM" <i>"HBT Verification" option and "HBT Monitoring" option</i> Order code for "Application package", option EB "Heartbeat Verification + Monitoring" <i>"Concentration" option</i> Order code for "Application package", option ED "Concentration" and option EE "Special density" <i>"Viscosity" option</i>  Only available for Promass I. Order code for "Application package", option EG "Viscosity" <i>"Petroleum" option</i>  Only available for Promass E, F, O, Q and X. Order code for "Application package", option EJ "Petroleum"

3.2 "Sensor" submenu

Navigation  Expert → Sensor

► Sensor	
► Measured val.	→  46
► System units	→  60

* Visibility depends on order options or device settings

► Process param.	→ 68
► Measurement mode	→ 76
► External comp.	→ 78
► Calculated value	→ 81
► Sensor adjustm.	→ 84
► Calibration	→ 91

3.2.1 "Measured val." submenu

Navigation   Expert → Sensor → Measured val.

► Measured val.	
► Process variab.	→ 46
► Totalizer	→ 54
► Input values	→ 55
► Output values	→ 56

"Process variab." submenu

Navigation   Expert → Sensor → Measured val. → Process variab.

► Process variab.	
Mass flow (1838)	→ 47
Volume flow (1847)	→ 47
Correct.vol.flow (1851)	→ 48
Density (1850)	→ 48
Ref.density (1852)	→ 48
Temperature (1853)	→ 49
Pressure value (6129)	→ 49
Dynam. viscosity (1854)	→ 49

Kinematic visc. (1857)	→ 50
TempCompDynVisc (1872)	→ 50
TempCompKinVisc (1863)	→ 50
Concentration (1887)	→ 51
Target mass flow (1864)	→ 51
Carrier mass fl. (1865)	→ 52
Targ.corr.vol.fl (1893)	→ 52
Carr.corr.vol.fl (1894)	→ 52
Target vol. flow (1895)	→ 53
Carrier vol. fl. (1896)	→ 53

Mass flow

Navigation	Expert → Sensor → Measured val. → Process variab. → Mass flow (1838)
Description	Displays the mass flow that is currently measured.
User interface	Signed floating-point number
Additional information	<i>Dependency</i> The unit is taken from the Mass flow unit parameter (→ 61)

Volume flow

Navigation	Expert → Sensor → Measured val. → Process variab. → Volume flow (1847)
Description	Displays the volume flow currently calculated.
User interface	Signed floating-point number

Additional information	<i>Description</i> The volume flow is calculated from the mass flow currently measured and the density currently measured. <i>Dependency</i>  The unit is taken from the Volume flow unit parameter (→  62)
-------------------------------	---

Correct.vol.flow

Navigation	  Expert → Sensor → Measured val. → Process variab. → Correct.vol.flow (1851)
Description	Displays the corrected volume flow currently measured.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Cor.volflow unit parameter (→  64)

Density

Navigation	  Expert → Sensor → Measured val. → Process variab. → Density (1850)
Description	Displays the density currently measured.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Density unit parameter (→  65)

Ref.density

Navigation	  Expert → Sensor → Measured val. → Process variab. → Ref.density (1852)
Description	Displays the reference density currently calculated.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Ref. dens. unit parameter (→  66)

Temperature

Navigation	 Expert → Sensor → Measured val. → Process variab. → Temperature (1853)
Description	Displays the medium temperature currently measured.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Temperature unit parameter (→  66)

Pressure value

Navigation	 Expert → Sensor → Measured val. → Process variab. → Pressure value (6129)
Description	Displays the fixed or external pressure value.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Pressure unit parameter (→  67)

Dynam. viscosity

Navigation	 Expert → Sensor → Measured val. → Process variab. → Dynam. viscosity (1854)
Prerequisite	For the following order code: "Application package", option EG "Viscosity"  The software options currently enabled are displayed in the SW option overv. parameter (→  45).
Description	Displays the dynamic viscosity currently calculated.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Dyn. visc. unit parameter.

Kinematic visc.

Navigation	 Expert → Sensor → Measured val. → Process variab. → Kinematic visc. (1857)
Prerequisite	For the following order code: "Application package", option EG "Viscosity"  The software options currently enabled are displayed in the SW option overv. parameter (→  45).
Description	Displays the kinematic viscosity currently calculated.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Kin. visc. unit parameter (0578).

TempCompDynVisc

Navigation	 Expert → Sensor → Measured val. → Process variab. → TempCompDynVisc (1872)
Prerequisite	For the following order code: "Application package", option EG "Viscosity"  The software options currently enabled are displayed in the SW option overv. parameter (→  45).
Description	Displays the temperature compensation currently calculated for the viscosity.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Dyn. visc. unit parameter.

TempCompKinVisc

Navigation	 Expert → Sensor → Measured val. → Process variab. → TempCompKinVisc (1863)
Prerequisite	For the following order code: "Application package", option EG "Viscosity"  The software options currently enabled are displayed in the SW option overv. parameter (→  45).
Description	Displays the temperature compensation currently calculated for the kinetic viscosity.
User interface	Signed floating-point number

Additional information*Dependency*

The unit is taken from the **Kin. visc. unit** parameter (0578).

Concentration

Navigation

Expert → Sensor → Measured val. → Process variab. → Concentration (1887)

Prerequisite

For the following order code:

Order code for "Application package", option **ED** "Concentration"



The software options currently enabled are displayed in the **SW option overv.** parameter (→ 45).

Description

Displays the concentration currently calculated.

User interface

Signed floating-point number

Additional information*Dependency*

The unit is taken from the **Concentr. unit** parameter (0613).

Target mass flow

Navigation

Expert → Sensor → Measured val. → Process variab. → Target mass flow (1864)

Prerequisite

With the following conditions:

Order code for "Application package", option **ED** "Concentration"



The software options currently enabled are displayed in the **SW option overv.** parameter (→ 45).

Description

Displays the mass flow currently measured for the target medium.

User interface

Signed floating-point number

Additional information*Dependency*

The unit is taken from the **Mass flow unit** parameter (→ 61)

Carrier mass fl.

Navigation  Expert → Sensor → Measured val. → Process variab. → Carrier mass fl. (1865)

Prerequisite With the following conditions:
 Order code for "Application package", option **ED** "Concentration"
 The software options currently enabled are displayed in the **SW option overv.** parameter (→  45).

Description Displays the mass flow currently measured for the carrier medium.

User interface Signed floating-point number

Additional information *Dependency*
 The unit is taken from the **Mass flow unit** parameter (→  61)

Targ.corr.vol.fl

Navigation  Expert → Sensor → Measured val. → Process variab. → Targ.corr.vol.fl (1893)

Prerequisite With the following conditions:
 ■ Order code for "Application package", option **ED** "Concentration"
 ■ In the **Liquid type** parameter, the **Ethanol in water** option or **%mass / %volume** option is selected.
 The software options currently enabled are displayed in the **SW option overv.** parameter (→  45).

Description Displays the corrected volume flow currently measured for the target fluid.

User interface Signed floating-point number

Additional information *Dependency*
 The unit is taken from the **Volume flow unit** parameter (→  62)

Carr.corr.vol.fl

Navigation  Expert → Sensor → Measured val. → Process variab. → Carr.corr.vol.fl (1894)

Prerequisite With the following conditions:
 ■ Order code for "Application package", option **ED** "Concentration"
 ■ In the **Liquid type** parameter, the **Ethanol in water** option or **%mass / %volume** option is selected.
 The software options currently enabled are displayed in the **SW option overv.** parameter (→  45).

Description Displays the corrected volume flow currently measured for the carrier fluid.

User interface Signed floating-point number

Additional information *Dependency*



The unit is taken from the **Volume flow unit** parameter (→ 62)

Target vol. flow

Navigation Expert → Sensor → Measured val. → Process variab. → Target vol. flow (1895)

Prerequisite With the following conditions:

- Order code for "Application package", option **ED** "Concentration"
- The **Ethanol in water** option or **%mass / %volume** option is selected in the **Liquid type** parameter.
- The **%vol** option is selected in the **Concentr. unit** parameter.

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 45).

Description Displays the volume flow currently measured for the target medium.

User interface Signed floating-point number

Additional information *Dependency*



The unit is taken from the **Volume flow unit** parameter (→ 62)

Carrier vol. fl.

Navigation Expert → Sensor → Measured val. → Process variab. → Carrier vol. fl. (1896)

Prerequisite With the following conditions:

- Order code for "Application package", option **ED** "Concentration"
- The **Ethanol in water** option or **%mass / %volume** option is selected in the **Liquid type** parameter.
- The **%vol** option is selected in the **Concentr. unit** parameter.

The software options currently enabled are displayed in the **SW option overv.** parameter (→ 45).

Description Use this function to display the volume flow currently measured for the carrier medium.

User interface Signed floating-point number

Additional information *Dependency*



The unit is taken from the **Volume flow unit** parameter (→ 62)

"Totalizer" submenu

Navigation  Expert → Sensor → Measured val. → Totalizer

► Totalizer

Totalizer val. 1 to n (3827-1 to n)

→  54

Status (Hex) 1 to n (3825-1 to n)

→  54

Tot. status 1 to n (3826-1 to n)

→  55

Totalizer val. 1 to n

Navigation	 Expert → Sensor → Measured val. → Totalizer → Totalizer val. 1 to n (3827-1 to n)
Prerequisite	In the Target mode parameter (→  217), the Auto option is selected.
Description	Displays the current reading for totalizer 1-3.
User interface	Signed floating-point number
Additional information	<i>Description</i>
	 In the event of an error, the totalizer adopts the mode defined in the Failure mode parameter (→  215).
	<i>User interface</i>
	The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the Operation mode parameter (→  214).
	<i>Dependency</i>
	 The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  212).

Status (Hex) 1 to n

Navigation	 Expert → Sensor → Measured val. → Totalizer → Status (Hex) 1 to n (3825-1 to n)
Prerequisite	In Target mode parameter (→  217), the Auto option is selected.
Description	Displays the status value (hex) of the particular totalizer.
User interface	0 to 0xFF

Tot. status 1 to n

Navigation	 Expert → Sensor → Measured val. → Totalizer → Tot. status 1 to n (3826-1 to n)
Description	Displays the status of the particular totalizer.
User interface	■ Good ■ Uncertain ■ Bad

"Input values" submenu

Navigation  Expert → Sensor → Measured val. → Input values

► Input values	
► Current input 1 to n	→  55
► Val.stat.inp. 1 to n	→  56

"Current input 1 to n" submenu

Navigation  Expert → Sensor → Measured val. → Input values → Current input 1 to n

► Current input 1 to n	
Measured val. 1 to n (1603-1 to n)	→  55
Measur. curr. 1 to n (1604-1 to n)	→  56

Measured val. 1 to n

Navigation	 Expert → Sensor → Measured val. → Input values → Current input 1 to n → Measured val. 1 to n (1603-1 to n)
Description	Displays the current input value.
User interface	Signed floating-point number

Measur. curr. 1 to n

Navigation	  Expert → Sensor → Measured val. → Input values → Current input 1 to n → Measur. curr. 1 to n (1604–1 to n)
Description	Displays the current value of the current input.
User interface	0 to 22.5 mA

"Value status input 1 to n" submenu

Navigation	  Expert → Sensor → Measured val. → Input values → Val.stat.inp. 1 to n
------------	---

► Val.stat.inp. 1 to n

Val.stat.inp. (1353–1 to n) →  56

Val.stat.inp.

Navigation	  Expert → Sensor → Measured val. → Input values → Val.stat.inp. 1 to n → Val.stat.inp. (1353–1 to n)
Description	Displays the current input signal level.
User interface	■ High ■ Low

"Output values" submenu

Navigation	  Expert → Sensor → Measured val. → Output values
------------	---

► Output values

► Value curr.out 1 to n →  57

► PFS output 1 to n →  57

► Relay output 1 to n →  59

"Value current output 1 to n" submenu

Navigation

 Expert → Sensor → Measured val. → Output values → Value curr.out 1 to n

► Value curr.out 1 to n

Output curr. 1 to n (0361-1 to n)

→  57

Measur. curr. 1 to n (0366-1 to n)

→  57

Output curr. 1 to n

Navigation

 Expert → Sensor → Measured val. → Output values → Value curr.out 1 to n → Output curr. 1 to n (0361-1 to n)

Description

Displays the current value currently calculated for the current output.

User interface

0 to 22.5 mA

Measur. curr. 1 to n

Navigation

 Expert → Sensor → Measured val. → Output values → Value curr.out 1 to n → Measur. curr. 1 to n (0366-1 to n)

Description

Use this function to display the actual measured value of the output current.

User interface

0 to 30 mA

"Pulse/frequency/switch output 1 to n" submenu

Navigation

 Expert → Sensor → Measured val. → Output values → PFS output 1 to n

► PFS output 1 to n

Output freq. 1 to n (0471-1 to n)

→  58

Pulse output 1 to n (0456-1 to n)

→  58

Switch status 1 to n (0461-1 to n)

→  59

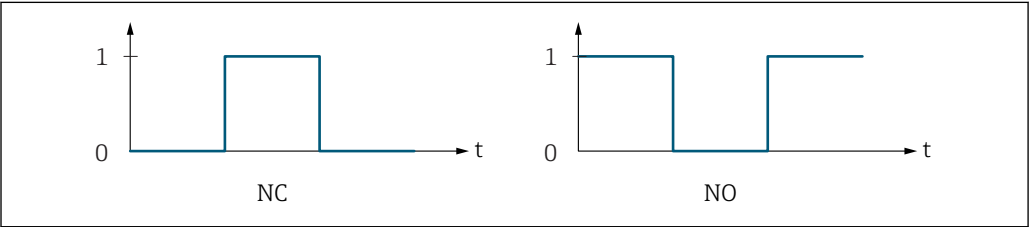
Output freq. 1 to n

Navigation	 Expert → Sensor → Measured val. → Output values → PFS output 1 to n → Output freq. 1 to n (0471-1 to n)
Prerequisite	In the Operating mode parameter (→  117), the Frequency option is selected.
Description	Displays the actual value of the output frequency which is currently measured.
User interface	0.0 to 12 500.0 Hz

Pulse output 1 to n

Navigation	 Expert → Sensor → Measured val. → Output values → PFS output 1 to n → Pulse output 1 to n (0456-1 to n)
Prerequisite	The Pulse option is selected in the Operating mode parameter (→  117) parameter.
Description	Displays the pulse frequency currently output.
User interface	Positive floating-point number

Additional information	Description ■ The pulse output is an open collector output. ■ This is configured at the factory in such a way that the transistor is conductive for the duration of the pulse (NO contact) and is safety-oriented.
------------------------	--



A0028726

- 0 Non-conductive
- 1 Conductive
- NC NC contact (normally closed)
- NO NO contact (normally open)

The output behavior can be reversed via the **Invert outp.sig.** parameter (→  136) i.e. the transistor does not conduct for the duration of the pulse.

In addition, the behavior of the output in the event of a device alarm (**Failure mode** parameter (→  121)) can be configured.

Switch status 1 to n

Navigation	 Expert → Sensor → Measured val. → Output values → PFS output 1 to n → Switch status 1 to n (0461-1 to n)
Prerequisite	The Switch option is selected in the Operating mode parameter (→  117).
Description	Displays the current switch status of the status output.
User interface	■ Open ■ Closed
Additional information	<i>User interface</i> ■ Open The switch output is not conductive. ■ Closed The switch output is conductive.

"Relay output 1 to n" submenu

Navigation	 Expert → Sensor → Measured val. → Output values → Relay output 1 to n
► Relay output 1 to n Switch status (0801-1 to n) →  59 Switch cycles (0815-1 to n) →  60 Max. cycles no. (0817-1 to n) →  60	

Switch status

Navigation	 Expert → Sensor → Measured val. → Output values → Relay output 1 to n → Switch status (0801-1 to n)
Description	Displays the current status of the relay output.
User interface	■ Open ■ Closed
Additional information	<i>User interface</i> ■ Open The relay output is not conductive. ■ Closed The relay output is conductive.

Switch cycles

Navigation	 Expert → Sensor → Measured val. → Output values → Relay output 1 to n → Switch cycles (0815–1 to n)
Description	Displays all the switch cycles performed.
User interface	Positive integer

Max. cycles no.

Navigation	 Expert → Sensor → Measured val. → Output values → Relay output 1 to n → Max. cycles no. (0817–1 to n)
Description	Displays the maximum number of guaranteed switch cycles.
User interface	Positive integer

3.2.2 "System units" submenu

Navigation  Expert → Sensor → System units

► System units		
Mass flow unit (0554)	→	 61
Mass unit (0574)	→	 61
Volume flow unit (0553)	→	 62
Volume unit (0563)	→	 63
Cor.volfow unit (0558)	→	 64
Corr. vol. unit (0575)	→	 64
Density unit (0555)	→	 65
Ref. dens. unit (0556)	→	 66
Temperature unit (0557)	→	 66

Pressure unit (0564)	→ 67
Date/time format (2812)	→ 68

Mass flow unit

Navigation Expert → Sensor → System units → Mass flow unit (0554)

Description Use this function to select the unit for the mass flow.

Selection	<i>SI units</i>	<i>US units</i>
	■ g/s ■ g/min ■ g/h ■ g/d ■ kg/s ■ kg/min ■ kg/h ■ kg/d ■ t/s ■ t/min ■ t/h ■ t/d	■ oz/s ■ oz/min ■ oz/h ■ oz/d ■ lb/s ■ lb/min ■ lb/h ■ lb/d ■ STon/s ■ STon/min ■ STon/h ■ STon/d

Factory setting Country-specific:

- kg/h (DN > 150 (6"): t/h)
- lb/min

Additional information *Result*
The selected unit applies for:

- **Target mass flow** parameter (→ 51)
- **Carrier mass fl.** parameter (→ 52)
- **Mass flow** parameter (→ 47)

Selection
 For an explanation of the abbreviated units: → 280

Mass unit

Navigation Expert → Sensor → System units → Mass unit (0574)

Description Use this function to select the unit for the mass.

Selection	<i>SI units</i>	<i>US units</i>
	■ g ■ kg ■ t	■ oz ■ lb ■ STon

Factory setting Country-specific:
■ kg (DN > 150 (6"): t)
■ lb

Additional information *Selection*
 For an explanation of the abbreviated units: →  280

Volume flow unit

Navigation  Expert → Sensor → System units → Volume flow unit (0553)

Description Use this function to select the unit for the volume flow.

Selection	<i>SI units</i>	<i>US units</i>	<i>Imperial units</i>
	■ cm³/s	■ af/s	■ gal/s (imp)
	■ cm³/min	■ af/min	■ gal/min (imp)
	■ cm³/h	■ af/h	■ gal/h (imp)
	■ cm³/d	■ af/d	■ gal/d (imp)
	■ dm³/s	■ ft³/s	■ Mgal/s (imp)
	■ dm³/min	■ ft³/min	■ Mgal/min (imp)
	■ dm³/h	■ ft³/h	■ Mgal/h (imp)
	■ dm³/d	■ ft³/d	■ Mgal/d (imp)
	■ m³/s	■ fl oz/s (us)	■ bbl/s (imp;oil)
	■ m³/min	■ fl oz/min (us)	■ bbl/min (imp;oil)
	■ m³/h	■ fl oz/h (us)	■ bbl/h (imp;oil)
	■ m³/d	■ fl oz/d (us)	■ bbl/d (imp;oil)
	■ ml/s	■ gal/s (us)	
	■ ml/min	■ gal/min (us)	
	■ ml/h	■ gal/h (us)	
	■ ml/d	■ gal/d (us)	
	■ l/s	■ kgal/s (us)	
	■ l/min	■ kgal/min (us)	
	■ l/h	■ kgal/h (us)	
	■ l/d	■ kgal/d (us)	
	■ hl/s	■ Mgal/s (us)	
	■ hl/min	■ Mgal/min (us)	
	■ hl/h	■ Mgal/h (us)	
	■ hl/d	■ Mgal/d (us)	
	■ Ml/s	■ bbl/s (us;oil)	
	■ Ml/min	■ bbl/min (us;oil)	
	■ Ml/h	■ bbl/h (us;oil)	
	■ Ml/d	■ bbl/d (us;oil)	
		■ bbl/s (us;tank)	
		■ bbl/min (us;tank)	
		■ bbl/h (us;tank)	
		■ bbl/d (us;tank)	

or

US units

- bbl/s (us;liq.) *
- bbl/min (us;liq.) *
- bbl/h (us;liq.) *
- bbl/d (us;liq.) *
- bbl/s (us;beer) *
- bbl/min (us;beer) *
- bbl/h (us;beer) *
- bbl/d (us;beer) *

Imperial units

- bbl/s (imp;beer) *
- bbl/min (imp;beer) *
- bbl/h (imp;beer) *
- bbl/d (imp;beer) *

* Visibility depends on order options or device settings

Factory setting

Country-specific:

- l/h (DN > 150 (6"): m³/h)
- gal/min (us)

Additional information*Result*

The selected unit applies for:

Volume flow parameter (→  47)

Selection

For an explanation of the abbreviated units: →  280

Volume unit**Navigation**

  Expert → Sensor → System units → Volume unit (0563)

Description

Use this function to select the unit for the volume.

Selection*SI units*

- cm³
- dm³
- m³
- ml
- l
- hl
- Ml Mega

US units

- af
- ft³
- fl oz (us)
- gal (us)
- kgal (us)
- Mgal (us)
- bbl (us;oil)
- bbl (us;tank)

Imperial units

- gal (imp)
- Mgal (imp)
- bbl (imp;oil)

or

US units

- bbl (us;liq.) *
- bbl (us;beer) *

Imperial units

- bbl (imp;beer) *

* Visibility depends on order options or device settings

Factory setting

Country-specific:

- l (DN > 150 (6"): m³)
- gal (us)

Additional information

Selection

 For an explanation of the abbreviated units: →  280

Cor.volflow unit



Navigation

  Expert → Sensor → System units → Cor.volflow unit (0558)

Description

Use this function to select the unit for the corrected volume flow.

Selection

SI units	US units	Imperial units
■ NI/s	■ Sft ³ /s	■ Sgal/s (imp)
■ NI/min	■ Sft ³ /min	■ Sgal/min (imp)
■ NI/h	■ Sft ³ /h	■ Sgal/h (imp)
■ NI/d	■ Sft ³ /d	■ Sgal/d (imp)
■ Nm ³ /s	■ Sgal/s (us)	
■ Nm ³ /min	■ Sgal/min (us)	
■ Nm ³ /h	■ Sgal/h (us)	
■ Nm ³ /d	■ Sgal/d (us)	
■ Sm ³ /s	■ Sbbl/s (us;liq.)	
■ Sm ³ /min	■ Sbbl/min (us;liq.)	
■ Sm ³ /h	■ Sbbl/h (us;liq.)	
■ Sm ³ /d	■ Sbbl/d (us;liq.)	

Factory setting

Country-specific:
■ NI/h (DN > 150 (6"): Nm³/h)
■ Sft³/min

Additional information

Result

The selected unit applies for:
Correct.vol.flow parameter (→  48)

Selection

 For an explanation of the abbreviated units: →  280

Corr. vol. unit



Navigation

  Expert → Sensor → System units → Corr. vol. unit (0575)

Description

Use this function to select the unit for the corrected volume.

Selection

SI units	US units	Imperial units
■ NI	■ Sft ³	■ Sgal (imp)
■ Nm ³	■ Sgal (us)	
■ Sm ³	■ Sbbl (us;liq.)	

Factory setting

Country-specific:
■ NI (DN > 150 (6"): Nm³)
■ Sft³

Additional information

Selection

 For an explanation of the abbreviated units: →  280

Density unit



Navigation

  Expert → Sensor → System units → Density unit (0555)

Description

Use this function to select the unit for the density.

Selection

SI units

- g/cm³
- g/m³
- g/ml
- kg/l
- kg/dm³
- kg/m³
- SD4°C
- SD15°C
- SD20°C
- SG4°C
- SG15°C
- SG20°C

US units

- lb/ft³
- lb/gal (us)
- lb/bbl (us;oil)
- lb/bbl (us;tank)

Imperial units

- lb/gal (imp)
- lb/bbl (imp;oil)

or

US units
SG60°F *

Other units
°API *

* Visibility depends on order options or device settings

or

US units

- lb/bbl (us;liq.) *
- lb/bbl (us;beer) *

Imperial units

lb/bbl (imp;beer) *

* Visibility depends on order options or device settings

Factory setting

Country-specific:

- kg/l
- lb/ft³

Additional information	Result The selected unit applies for: ■ Density setpt 1 parameter ■ Density setpt 2 parameter ■ Density parameter (→ ⓘ 48) Selection ■ SD = specific density The specific density is the ratio of the medium density to the water density at a water temperature of +4 °C (+39 °F), +15 °C (+59 °F), +20 °C (+68 °F). ■ SG = specific gravity The specific gravity is the ratio of the medium density to the water density at a water temperature of +4 °C (+39 °F), +15 °C (+59 °F), +20 °C (+68 °F).  For an explanation of the abbreviated units: → ⓘ 280
------------------------	--

Ref. dens. unit

Navigation	 Expert → Sensor → System units → Ref. dens. unit (0556)		
Description	Use this function to select the unit for the reference density.		
Selection	SI units ■ kg/Nm³ ■ kg/Nl ■ g/Scm³ ■ kg/Sm³ ■ RD15°C ■ RD20°C	US units ■ lb/Sft³ ■ RD60°F	Other units °APIbase
Factory setting	Country-dependent ■ kg/Nl ■ lb/Sft³		
Additional information	Result The selected unit applies for: ■ Ext. ref.density parameter (→ ⓘ 82) ■ Fix ref.density parameter (→ ⓘ 82) ■ Ref.density parameter (→ ⓘ 48) Selection  For an explanation of the abbreviated units: → ⓘ 280		

Temperature unit

Navigation	 Expert → Sensor → System units → Temperature unit (0557)
Description	Use this function to select the unit for the temperature.

Selection	<i>SI units</i> ■ °C ■ K	<i>US units</i> ■ °F ■ °R
Factory setting	Country-specific: ■ °C ■ °F	
Additional information	<i>Result</i> The selected unit applies for: ■ Maximum value parameter (→  245) ■ Minimum value parameter (→  245) ■ Maximum value parameter (→  246) ■ Minimum value parameter (→  246) ■ Maximum value parameter (→  247) ■ Minimum value parameter (→  247) ■ External temp. parameter (→  81) ■ Ref. temperature parameter (6222) ■ Temperature parameter (→  49) ■ Ref. temperature parameter (→  83) <i>Selection</i>  For an explanation of the abbreviated units: →  280	

Pressure unit

Navigation	  Expert → Sensor → System units → Pressure unit (0564)	
Description	Use this function to select the unit for the pipe pressure.	
Selection	<i>SI units</i> ■ Pa a ■ kPa a ■ MPa a ■ bar ■ Pa g ■ kPa g ■ MPa g ■ bar g	<i>US units</i> ■ psi a ■ psi g
Factory setting	Country-specific: ■ bar a ■ psi a	

Additional information	<i>Result</i> The unit is taken from: ■ Pressure value parameter (→ ⓘ 79) ■ External press. parameter (→ ⓘ 80) ■ Pressure value parameter (→ ⓘ 49) <i>Selection</i> ⓘ For an explanation of the abbreviated units: → ⓘ 280
------------------------	--

Date/time format ⓘ

Navigation	ⓘ ⓘ Expert → Sensor → System units → Date/time format (2812)
Description	Use this function to select the desired time format for calibration history.
Selection	■ dd.mm.yy hh:mm ■ dd.mm.yy am/pm ■ mm/dd/yy hh:mm ■ mm/dd/yy am/pm
Factory setting	dd.mm.yy hh:mm
Additional information	<i>Selection</i> ⓘ For an explanation of the abbreviated units: → ⓘ 280

3.2.3 "Process param." submenu

Navigation ⓘ ⓘ Expert → Sensor → Process param.

▶ Process param.

Flow damping (1802)

→ ⓘ 69

Density damping (1803)

→ ⓘ 69

Temp. damping (1822)

→ ⓘ 70

Flow override (1839)

→ ⓘ 70

▶ Low flow cut off

→ ⓘ 71

▶ Partial pipe det

→ ⓘ 74

Flow damping


Navigation	Expert → Sensor → Process param. → Flow damping (1802)
Description	Use this function to enter a time constant for flow damping (PT1 element). Reduction of the variability of the flow measured value (in relation to interference). For this purpose, the depth of the flow filter is adjusted: when the filter setting increases, the reaction time of the device also increases.
User entry	0 to 100.0 s
Factory setting	0 s
Additional information	<i>Description</i> The damping is performed by a PT1 element ²⁾. <i>User entry</i> ■ Value = 0: no damping ■ Value > 0: damping is increased Damping is switched off if 0 is entered (factory setting). <i>Result</i> The damping affects the following variables of the device: ■ Outputs ■ Low flow cut off → 71 ■ Totalizers → 211

Density damping


Navigation	Expert → Sensor → Process param. → Density damping (1803)
Description	Use this function to enter a time constant for the damping (PT1 element) of the density measured value.
User entry	0 to 999.9 s
Factory setting	0 s

2) Proportional behavior with first-order lag

Additional information	<i>Description</i>  The damping is performed by a PT1 element ³⁾ . <i>User entry</i> ▪ Value = 0: no damping ▪ Value > 0: damping is increased  Damping is switched off if 0 is entered (factory setting).
------------------------	---

Temp. damping	
---------------	---

Navigation	 Expert → Sensor → Process param. → Temp. damping (1822)
Description	Use this function to enter a time constant for the damping (PT1 element) of the temperature measured value.
User entry	0 to 999.9 s
Factory setting	0 s
Additional information	<i>Description</i>  The damping is performed by a PT1 element ⁴⁾ . <i>User entry</i> ▪ Value = 0: no damping ▪ Value > 0: damping is increased  Damping is switched off if 0 is entered (factory setting).

Flow override	
---------------	---

Navigation	 Expert → Sensor → Process param. → Flow override (1839)
Description	Use this function to select whether to interrupt the evaluation of measured values. This is useful for the cleaning processes of a pipeline, for example.
Selection	▪ Off ▪ On
Factory setting	Off

3) Proportional behavior with first-order lag
4) Proportional behavior with first-order lag

Additional information

Description

- Flow override is active**
- The diagnostic message diagnostic message  **C453 Flow override** is displayed.
 - Output values
 - Temperature: continues to be output
 - Totalizers 1-3: stop being totalized
-  The **Flow override** option can also be activated in the **Status input** submenu: **Assign stat.inp.** parameter (→  99).

"Low flow cut off" submenu

Navigation   Expert → Sensor → Process param. → Low flow cut off

► Low flow cut off

Assign variable (1837)

→  71

On value (1805)

→  71

Off value (1804)

→  72

Pres. shock sup. (1806)

→  72

Assign variable



- Navigation**   Expert → Sensor → Process param. → Low flow cut off → Assign variable (1837)
- Description** Use this function to select the process variable for low flow cutoff detection.
- Selection**
- Off
 - Mass flow
 - Volume flow
 - Correct.vol.flow *
- Factory setting** Mass flow

On value



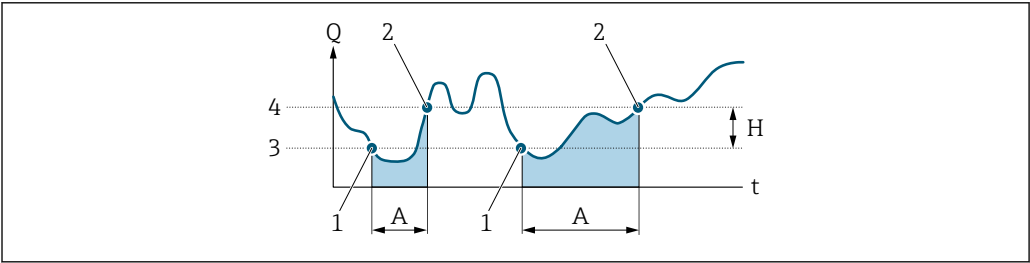
- Navigation**   Expert → Sensor → Process param. → Low flow cut off → On value (1805)
- Prerequisite** A process variable is selected in the **Assign variable** parameter (→  71).

* Visibility depends on order options or device settings

Description	Use this function to enter a switch-on value for low flow cut off. Low flow cut off is activated if the value entered is not equal to 0 →  72.
User entry	Positive floating-point number
Factory setting	Depends on country and nominal diameter→  275
Additional information	<i>Dependency</i>  The unit depends on the process variable selected in the Assign variable parameter (→  71).

Off value	
-----------	---

Navigation	  Expert → Sensor → Process param. → Low flow cut off → Off value (1804)
Prerequisite	A process variable is selected in the Assign variable parameter (→  71).
Description	Use this function to enter a switch-off value for low flow cut off. The off value is entered as a positive hysteresis from the on value→  71.
User entry	0 to 100.0 %
Factory setting	50 %
Additional information	<i>Example</i>



A0012887

- Q Flow
- t Time
- H Hysteresis
- A Low flow cut off active
- 1 Low flow cut off is activated
- 2 Low flow cut off is deactivated
- 3 On value entered
- 4 Off value entered

Pres. shock sup.	
------------------	---

Navigation	  Expert → Sensor → Process param. → Low flow cut off → Pres. shock sup. (1806)
Prerequisite	A process variable is selected in the Assign variable parameter (→  71).

Description	Use this function to enter the time interval for signal suppression (= active pressure shock suppression).
User entry	0 to 100 s
Factory setting	0 s

Additional information*Description***Pressure shock suppression is enabled**

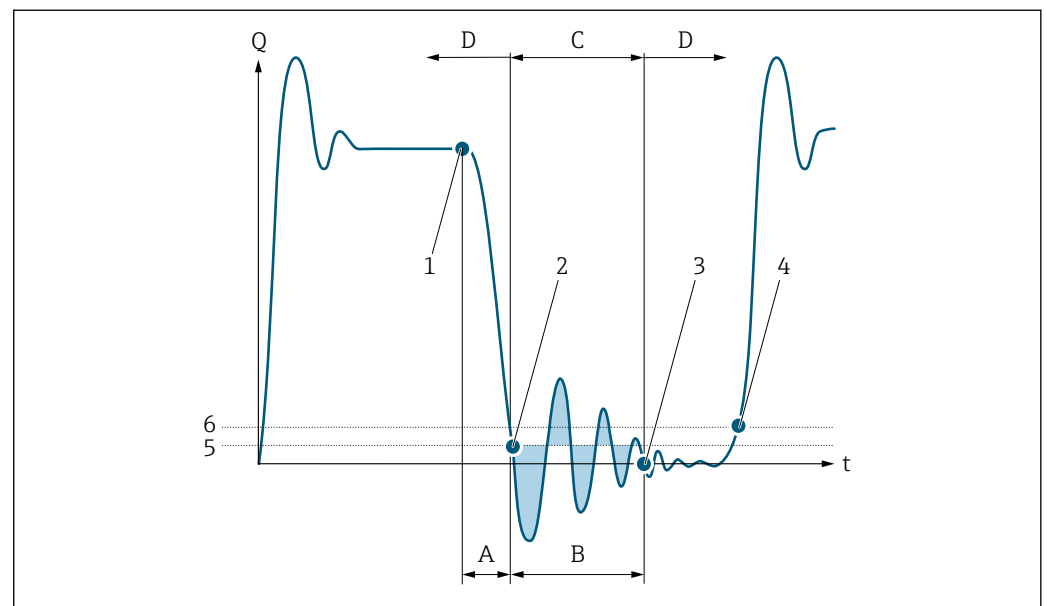
- Prerequisite:
 - Flow rate < on-value of low flow cut off
 - or
 - Changing the flow direction
- Output values
 - Flow displayed: 0
 - Totalizer: the totalizers are pegged at the last correct value

Pressure shock suppression is disabled

- Prerequisite: the time interval set in this function has elapsed.
- If the flow also exceeds the switch-off value for low flow cut off, the device starts processing the current flow value again and displays it.

Example

When closing a valve, momentarily strong fluid movements may occur in the pipeline, which are registered by the measuring system. These totalized flow values lead to a false totalizer status, particularly during batching processes.



A0012888

- Q* Flow
- t* Time
- A* Drip
- B* Pressure shock
- C* Pressure shock suppression active as specified by the time entered
- D* Pressure shock suppression inactive
- 1* Valve closes
- 2* Flow falls below the on-value of the low flow cut off: pressure shock suppression is activated
- 3* The time entered has elapsed: pressure shock suppression is deactivated
- 4* The actual flow value is now displayed and output
- 5* On-value for low flow cut off
- 6* Off-value for low flow cut off

"Partial pipe det" submenu

Navigation  Expert → Sensor → Process param. → Partial pipe det

► Partial pipe det

Assign variable (1860)

→  74

Low value (1861)

→  74

High value (1858)

→  75

Response time (1859)

→  75

Max. damping (6040)

→  76

Assign variable

Navigation  Expert → Sensor → Process param. → Partial pipe det → Assign variable (1860)

Description Use this function to select a process variable to detect empty or partially filled measuring tubes.
For gas measurement: Deactivate monitoring due to low gas density.

- Selection
- Off
 - Density
 - Ref.density

Factory setting Off

Low value

Navigation  Expert → Sensor → Process param. → Partial pipe det → Low value (1861)

Prerequisite A process variable is selected in the **Assign variable** parameter (→  74).

Description Use this function to enter a lower limit value to enable detection of empty or partially filled measuring tubes. If the measured density falls below this value, monitoring is enabled.

User entry Signed floating-point number

Factory setting 200

Additional information	<i>User entry</i> The lower limit value must be less than the upper limit value defined in the High value parameter (→  75).  The unit depends on the process variable selected in the Assign variable parameter (→  74). <i>Limit value</i>  If the displayed value is outside the limit value, the measuring device displays the diagnostic message △S862 Partly filled.
-------------------------------	--

High value	
Navigation	  Expert → Sensor → Process param. → Partial pipe det → High value (1858)
Prerequisite	A process variable is selected in the Assign variable parameter (→  74).
Description	Use this function to enter an upper limit value to enable detection of empty or partially filled measuring tubes. If the measured density exceeds this value, detection is enabled.
User entry	Signed floating-point number
Factory setting	6 000
Additional information	<i>User entry</i> The upper limit value must be greater than the lower limit value defined in the Low value parameter (→  74).  The unit depends on the process variable selected in the Assign variable parameter (→  74). <i>Limit value</i>  If the displayed value is outside the limit value, the measuring device displays the diagnostic message △S862 Partly filled.

Response time	
Navigation	  Expert → Sensor → Process param. → Partial pipe det → Response time (1859)
Prerequisite	A process variable is selected in the Assign variable parameter (→  74).
Description	Use this function to enter the minimum length of time (debouncing time) the signal must be present for the diagnostic message △S862 Partly filled to be triggered if the measuring pipe is empty or partially full.
User entry	0 to 100 s
Factory setting	1 s

Max. damping

Navigation	Expert → Sensor → Process param. → Partial pipe det → Max. damping (6040)
Description	Use this function to enter a damping value to enable detection of empty or partially filled measuring tubes.
User entry	Positive floating-point number
Factory setting	0
Additional information	<i>Description</i> If oscillation damping exceeds the specified value, the measuring device presumes that the pipe is partially filled and the flow signal is set to 0. The measuring device displays the diagnostic message △S862 Partly filled. In the case of non-homogeneous media or air pockets, the damping of the measuring tubes increases. <i>User entry</i> ■ Damping is disabled if 0 is entered (factory setting). ■ Damping is enabled if the value entered is greater than 0. ■ The value entered depends on application-specific influence variables, such as the medium, nominal diameter, sensor etc. <i>Example</i> ■ If the pipe is filled normally the value of the oscillation damping is 500. ■ If the pipe is partially filled the value of the oscillation damping is > 5000. ■ A practical damping value would then be 2000: enter 2000 as the value.

3.2.4 "Measurement mode" submenu

Navigation Expert → Sensor → Measurement mode

► Measurement mode

Select medium (6062)

→ 77

Select gas type (6074)

→ 77

Sound velocity (6147)

→ 78

Temp. coeff. SV (6181)

→ 78

Select medium 	
Navigation	  Expert → Sensor → Measurement mode → Select medium (6062)
Description	Use this function to select the type of medium.
Selection	■ Liquid ■ Gas
Factory setting	Liquid
Select gas type 	
Navigation	  Expert → Sensor → Measurement mode → Select gas type (6074)
Prerequisite	The Gas option is selected in the Select medium parameter (→  77).
Description	Use this function to select the type of gas for the measuring application.
Selection	■ Air ■ Ammonia NH₃ ■ Argon Ar ■ Sulf. hex.fl.SF₆ ■ Oxygen O₂ ■ Ozone O₃ ■ Nitrog. ox. NO_x ■ Nitrogen N₂ ■ Nitrous ox. N₂O ■ Methane CH₄ ■ Hydrogen H₂ ■ Helium He ■ Hydrog.chlor.HCl ■ Hydrog.sulf. H₂S ■ Ethylene C₂H₄ ■ Carbon diox. CO₂ ■ Carbon monox. CO ■ Chlorine Cl₂ ■ Butane C₄H₁₀ ■ Propane C₃H₈ ■ Propylene C₃H₆ ■ Ethane C₂H₆ ■ Others
Factory setting	Methane CH ₄
Additional information	<i>Description</i> The gas type needs to be selected so that it is possible to comply with accuracy specifications in gas applications.

Sound velocity

Navigation	 Expert → Sensor → Measurement mode → Sound velocity (6147)
Prerequisite	In the Select gas type parameter (→  77), the Others option is selected.
Description	Use this function to enter the sound velocity of the gas at 0 °C (+32 °F).
User entry	1 to 99 999.9999 m/s
Factory setting	415.0 m/s

Temp. coeff. SV

Navigation	 Expert → Sensor → Measurement mode → Temp. coeff. SV (6181)
Prerequisite	The Others option is selected in the Select gas type parameter (→  77).
Description	Use this function to enter a temperature coefficient for the sound velocity of the gas.
User entry	Positive floating-point number
Factory setting	0 (m/s)/K

3.2.5 "External comp." submenu

Navigation  Expert → Sensor → External comp.

► External comp.

Pressure compen. (6130)

→  79

Pressure value (6059)

→  79

External press. (6209)

→  80

Temp.corr.source (6184)

→  80

External temp. (6080)

→  81

Pressure compen.		
Navigation	  Expert → Sensor → External comp. → Pressure compen. (6130)	
Description	Use this function to select the type of pressure compensation.	
Selection	■ Off ■ Fixed value ■ External value ■ Current input 1 * ■ Current input 3 *	
Factory setting	Off	
Additional information	<i>Selection</i> ■ Fixed value A fixed pressure value is used for compensation: Pressure value parameter (→  79) ■ External value The pressure value read in via PROFIBUS PA is used for compensation. ■ Current input 1 option, Current input 3 option The pressure value read in via the current input is used for compensation.  For more information, see the "Cyclic data transmission" section of the Operating Instructions	
Pressure value		
Navigation	  Expert → Sensor → External comp. → Pressure value (6059)	
Prerequisite	The Fixed value option or the Current input 1...n option is selected in the Pressure compen. parameter (→  79).	
Description	Use this function to enter a value for the process pressure that is used for pressure correction.	
User entry	Positive floating-point number	
Factory setting	0 bar	
Additional information	<i>User entry</i>  The unit is taken from the Pressure unit parameter (→  67)	

* Visibility depends on order options or device settings

External press.

Navigation	 Expert → Sensor → External comp. → External press. (6209)
Prerequisite	The Fixed value option or the Current input 1...n option is selected in the Pressure compen. parameter (→  79).
Description	Use this function to enter an external pressure value.
User interface	Positive floating-point number
Factory setting	0 bar
Additional information	<i>User entry</i>  The unit is taken from the Pressure unit parameter (→  67)

Temp.corr.source



Navigation	 Expert → Sensor → External comp. → Temp.corr.source (6184)
Description	Use this function to select the temperature mode.
Selection	■ Internal value ■ External value ■ Current input 1 *
Factory setting	Internal value
Additional information	<i>Description</i> Use this function to select the type of temperature compensation. <i>Selection</i> All the options available for selection are used for measured value compensation. ■ Internal value The temperature value measured internally (temperature sensor of the measuring sensor) is used for compensation. ■ External value The temperature value read in via PROFIBUS PA is used for compensation. ■ Current input 1 option Visibility depends on order options or device settings The temperature value read in via the current input is used for compensation.  For more information, see the "Cyclic data transmission" section of the Operating Instructions

* Visibility depends on order options or device settings

External temp.

Navigation	 Expert → Sensor → External comp. → External temp. (6080)
Prerequisite	The External value option or the Current input 1...n option is selected in the Temperature mode parameter (→  80).
Description	Use this function to enter the external temperature.
User interface	-273.15 to 99 999 °C
Factory setting	Country-specific: ■ 0 °C ■ +32 °F
Additional information	<i>Description</i>  The unit is taken from the Temperature unit parameter (→  66)

3.2.6 "Calculated value" submenu

Navigation  Expert → Sensor → Calculated value

► Calculated value

► Corr. vol.flow. →  81

"Corr. vol.flow." submenu

Navigation  Expert → Sensor → Calculated value → Corr. vol.flow.

► Corr. vol.flow.

Corr. vol.flow. (1812) →  82

Ext. ref.density (6198) →  82

Fix ref.density (1814) →  82

Ref. temperature (1816) →  83

Linear exp coeff (1817) →  83

Square exp coeff (1818) →  84

Corr. vol.flow.

Navigation	 Expert → Sensor → Calculated value → Corr. vol.flow. → Corr. vol.flow. (1812)
Description	Use this function to select the reference density for calculating the corrected volume flow.
Selection	■ Fix ref.density ■ Calc ref density ■ Ext. ref.density ■ Current input 1 * ■ Current input 3 *
Factory setting	Calc ref density
Additional information	<i>Selection</i> The Ref. dens API 53 option is suitable only for applications involving LPG ⁵⁾, where the flow rate is measured on the basis of the corrected volume flow. Selecting this option means that the reference density is used, taking into account the values in table 53 E of API MPMS section 11.2. Temperature measurement (measured internally or read into the device from an external source →  78 →  78) and density measurement take place during operation while the medium is flowing. The mass flow is divided by the reference density to give the corrected volume flow and is issued as an output signal.

Ext. ref.density

Navigation	 Expert → Sensor → Calculated value → Corr. vol.flow. → Ext. ref.density (6198)
Description	Displays the reference density which is read in externally, e.g. via the current input.
User interface	Floating point number with sign
Additional information	<i>Dependency</i>  The unit is taken from the Ref. dens. unit parameter (→  66)

Fix ref.density

Navigation	 Expert → Sensor → Calculated value → Corr. vol.flow. → Fix ref.density (1814)
Prerequisite	The Fix ref.density option is selected in the Corr. vol.flow. parameter (→  82)
Description	Use this function to enter a fixed value for the reference density.

* Visibility depends on order options or device settings
 5) liquefied petroleum gas

User entry	Positive floating-point number
Factory setting	1 kg/Nl
Additional information	<i>Dependency</i>  The unit is taken from the Ref. dens. unit parameter (→  66)

Ref. temperature

Navigation	 Expert → Sensor → Calculated value → Corr. vol.flow. → Ref. temperature (1816)
Prerequisite	The Calc ref density option is selected in the Corr. vol.flow. parameter (→  82) parameter.
Description	Use this function to enter a reference temperature for calculating the reference density.
User entry	-273.15 to 99 999 °C
Factory setting	Country-specific: ■ +20 °C ■ +68 °F
Additional information	<i>Dependency</i>  The unit is taken from the Temperature unit parameter (→  66)

Reference density calculation

$$\rho_n = \rho \cdot (1 + \alpha \cdot \Delta t + \beta \cdot \Delta t^2)$$

A0023403

- ρ_N : reference density
- ρ : fluid density currently measured
- t : fluid temperature currently measured
- t_N : reference temperature at which the reference density is calculated (e.g. 20 °C)
- Δt : $t - t_N$
- α : linear expansion coefficient of the fluid, unit = [1/K]; K = Kelvin
- β : square expansion coefficient of the fluid, unit = [1/K²]

Linear exp coeff

Navigation	 Expert → Sensor → Calculated value → Corr. vol.flow. → Linear exp coeff (1817)
Prerequisite	The Calc ref density option is selected in the Corr. vol.flow. parameter (→  82) parameter.
Description	Use this function to enter a linear, fluid-specific expansion coefficient for calculating the reference density.

User entry	Signed floating-point number
Factory setting	0.0 1/K

Square exp coeff

Navigation	  Expert → Sensor → Calculated value → Corr. vol.flow. → Square exp coeff (1818)
Prerequisite	The Calc ref density option is selected in the Corr. vol.flow. parameter (→  82)
Description	For fluid with a non-linear expansion pattern: use this function to enter a quadratic, fluid-specific expansion coefficient for calculating the reference density.
User entry	Signed floating-point number
Factory setting	0.0 1/K ²

3.2.7 "Sensor adjustment" submenu

Navigation   Expert → Sensor → Sensor adjustm.

► Sensor adjustm.

Install. direct. (1809)

→  84

Inst. angle roll (6282)

→  85

Inst.angle pitch (6236)

→  85

► Zero point adj.

→  86

► Variable adjust

→  87

Install. direct.

Navigation	  Expert → Sensor → Sensor adjustm. → Install. direct. (1809)
Description	Use this function to change the sign of the medium flow direction.
Selection	■ In arrow direct. ■ Against arrow

Factory setting In arrow direct.

Additional information *Description*



Before changing the sign: ascertain the actual direction of fluid flow with reference to the direction indicated by the arrow on the sensor nameplate.

Inst. angle roll



Navigation Expert → Sensor → Sensor adjustm. → Inst. angle roll (6282)

Prerequisite Available only with Promass Q.

Description Use this function to enter the roll installation angle in degrees.

User entry -180 to 180 °

Factory setting 0 °

Additional information **FIGURE: ROLL ANGLE**

Roll angle

- The roll angle is the angle β from the vertical **V** to align the central axis **Z** of the transmitter.
- The roll angle can be between -180 to +180 °.

Inst.angle pitch



Navigation Expert → Sensor → Sensor adjustm. → Inst.angle pitch (6236)

Prerequisite Available only with Promass Q.

Description Use this function to enter the installation angle pitch in degrees.

User entry -180 to 180 °

Factory setting 0 °

Additional information **FIGURE: PITCH ANGLE**

Pitch angle

- The pitch angle is the angle α from the horizontal **H** to align the central axis **Z** of the measuring device.
- The pitch angle can be between -90 to +90 °.

"Zero point adj." submenu

- 
- It is generally not necessary to perform zero point adjustment.
 - However, this function may be needed in some applications with low flow and strict accuracy requirements.
 - A zero point adjustment cannot increase repeatability.
 - The following conditions should be met to perform a zero point adjustment successfully without the adjustment finishing in an error:
 - The real flow must be 0.
 - The pressure must be at least 15 psi g.
 - The adjustment takes a maximum of 60 s. The more stable the conditions, the faster the adjustment is completed.
 - This function can also be used to check the health of the measuring device. A healthy measuring device has a maximum zero point deviation of ±100 compared to the factory setting of the measuring device (calibration report).

Navigation  Expert → Sensor → Sensor adjustm. → Zero point adj.

► Zero point adj.

Zero point adj. (6196)

→  86

Progress (2808)

→  87

Zero point adj.

Navigation	 Expert → Sensor → Sensor adjustm. → Zero point adj. → Zero point adj. (6196)  Expert → Sensor → Sensor adjustm. → Zero point adj. → Zero point adj. (6196)
Description	Use this function to select the start of the zero point adjustment.  Observe conditions →  86.
Selection	■ Cancel ■ Busy * ■ Zero adjust fail * ■ Start *
Factory setting	Cancel
Additional information	Description ■ Cancel If zero point adjustment has failed, select this option to cancel zero point adjustment. ■ Busy Is displayed during zero point adjustment. ■ Zero adjust fail Is displayed if zero point adjustment has failed. ■ Start Select this option to start zero point adjustment.

* Visibility depends on order options or device settings

Progress

Navigation	 Expert → Sensor → Sensor adjustm. → Zero point adj. → Progress (2808)
Description	The progress of the process is indicated.
User interface	0 to 100 %

"Variable adjust" submenu

Navigation  Expert → Sensor → Sensor adjustm. → Variable adjust

► Variable adjust		
Mass flow offset (1831)	→	 87
Mass flow factor (1832)	→	 88
Vol. flow offset (1841)	→	 88
Vol. flow factor (1846)	→	 88
Density offset (1848)	→	 89
Density factor (1849)	→	 89
Corr. vol offset (1866)	→	 89
Corr. vol factor (1867)	→	 90
Ref.dens. offset (1868)	→	 90
Ref.dens. factor (1869)	→	 90
Temp. offset (1870)	→	 91
Temp. factor (1871)	→	 91

Mass flow offset



Navigation	 Expert → Sensor → Sensor adjustm. → Variable adjust → Mass flow offset (1831)
Description	Use this function to enter the zero point shift for the mass flow trim. The mass flow unit on which the shift is based is kg/s.

User entry Signed floating-point number

Factory setting 0 kg/s

Additional information *Description*

 Corrected value = (factor × value) + offset

Mass flow factor

Navigation   Expert → Sensor → Sensor adjustm. → Variable adjust → Mass flow factor (1832)

Description Use this function to enter a quantity factor (without time) for the mass flow. This multiplication factor is applied over the mass flow range.

User entry Positive floating-point number

Factory setting 1

Additional information *Description*

 Corrected value = (factor × value) + offset

Vol. flow offset

Navigation   Expert → Sensor → Sensor adjustm. → Variable adjust → Vol. flow offset (1841)

Description Use this function to enter the zero point shift for the volume flow trim. The volume flow unit on which the shift is based is m³/s.

User entry Signed floating-point number

Factory setting 0 m³/s

Additional information *Description*

 Corrected value = (factor × value) + offset

Vol. flow factor

Navigation   Expert → Sensor → Sensor adjustm. → Variable adjust → Vol. flow factor (1846)

Description Use this function to enter a quantity factor (without time) for the volume flow. This multiplication factor is applied over the volume flow range.

User entry Positive floating-point number

Factory setting 1

Additional information *Description*



Corrected value = (factor × value) + offset

Density offset



Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Density offset (1848)

Description Use this function to enter the zero point shift for the density trim. The density unit on which the shift is based is kg/m³.

User entry Signed floating-point number

Factory setting 0 kg/m³

Additional information *Description*



Corrected value = (factor × value) + offset

Density factor



Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Density factor (1849)

Description Use this function to enter a quantity factor for the density. This multiplication factor is applied over the density range.

User entry Positive floating-point number

Factory setting 1

Additional information *Description*



Corrected value = (factor × value) + offset

Corr. vol offset



Navigation Expert → Sensor → Sensor adjustm. → Variable adjust → Corr. vol offset (1866)

Description Use this function to enter the zero point shift for the corrected volume flow trim. The corrected volume flow unit on which the shift is based is 1 Nm³/s.

User entry Signed floating-point number

Factory setting 0 Nm³/s

Additional information *Description*

Corrected value = (factor × value) + offset

Corr. vol factor**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Corr. vol factor (1867)

Description

Use this function to enter a quantity factor (without time) for the corrected volume flow. This multiplication factor is applied over the corrected volume flow range.

User entry

Positive floating-point number

Factory setting

1

Additional information *Description*

Corrected value = (factor × value) + offset

Ref.dens. offset**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Ref.dens. offset (1868)

Description

Use this parameter to enter the zero point shift for the reference density trim. The reference density unit on which the shift is based is 1 kg/Nm³.

User entry

Signed floating-point number

Factory setting0 kg/Nm³**Additional information** *Description*

Corrected value = (factor × value) + offset

Ref.dens. factor**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Ref.dens. factor (1869)

Description

Use this function to enter a quantity factor (without time) for the reference density. This multiplication factor is applied over the reference density range.

User entry

Positive floating-point number

Factory setting

1

Additional information	
 Corrected value = (factor × value) + offset	
Temp. offset	
Navigation   Expert → Sensor → Sensor adjustm. → Variable adjust → Temp. offset (1870)	
Description	Use this function to enter the zero point shift for the temperature trim. The temperature unit on which the shift is based is K.
User entry	Signed floating-point number
Factory setting	0 K
Additional information	
 Corrected value = (factor × value) + offset	
Temp. factor	
Navigation   Expert → Sensor → Sensor adjustm. → Variable adjust → Temp. factor (1871)	
Description	Use this function to enter a quantity factor for the temperature. In each case, this factor refers to the temperature in K.
User entry	Positive floating-point number
Factory setting	1
Additional information	
 Corrected value = (factor × value) + offset	

3.2.8 "Calibration" submenu

Navigation   Expert → Sensor → Calibration

► Calibration

Cal. factor (6025)

→  92

Zero point (6195)

→  92

Nominal diameter (2807)	→ 92
C0 to 5 (6022)	→ 93

Cal. factor

Navigation	Expert → Sensor → Calibration → Cal. factor (6025)
Description	Displays the current calibration factor for the sensor.
User interface	Signed floating-point number
Factory setting	Depends on nominal diameter and calibration.

Zero point



Navigation	Expert → Sensor → Calibration → Zero point (6195)
Description	Use this function to enter the zero point correction value for the sensor.
User entry	Signed floating-point number
Factory setting	Depends on nominal diameter and calibration.

Nominal diameter

Navigation	Expert → Sensor → Calibration → Nominal diameter (2807)
Description	Displays the nominal diameter of the sensor.
User interface	DNxx / x"
Factory setting	Depends on the size of the sensor
Additional information	<i>Description</i>  The value is also specified on the sensor nameplate.

C0 to 5

Navigation	 Expert → Sensor → Calibration → C0 to 5 (6022)
Description	Displays the current density coefficients C0 to 5 of the sensor.
User interface	Signed floating-point number
Factory setting	0

3.3 "I/O configuration" submenu

Navigation  Expert → I/O config.

► I/O config.

I/O 1 to n terminals (3902-1 to n)

I/O 1 to n info (3906-1 to n)

I/O 1 to n type (3901-1 to n)

Apply I/O config (3907)

Alteration code (2762)

→  93

→  93

→  94

→  94

→  95

I/O 1 to n terminals

Navigation	 Expert → I/O config. → I/O 1 to n terminals (3902-1 to n)
Description	Displays the terminal numbers used by the I/O module.
User interface	■ Not used ■ 26-27 (I/O 1) ■ 24-25 (I/O 2)

I/O 1 to n info

Navigation	 Expert → I/O config. → I/O 1 to n info (3906-1 to n)
Description	Displays information about the plugged in I/O module.

User interface	■ Not plugged ■ Invalid ■ Not configurable ■ Configurable ■ Profibus PA
Additional information	<i>"Not plugged" option</i> The I/O module is not plugged in. <i>"Invalid" option</i> The I/O module is not plugged correctly. <i>"Not configurable" option</i> The I/O module is not configurable. <i>"Configurable" option</i> The I/O module is configurable. <i>"Profibus PA" option</i> The I/O module is configured for PROFIBUS PA.

I/O 1 to n type



Navigation	Expert → I/O config. → I/O 1 to n type (3901–1 to n)
Prerequisite	For the following order code: "Output; input 2", option D "Configurable I/O initial setting off"
Description	Use this function to select the I/O module type for the configuration of the I/O module.
Selection	■ Off ■ Curr.output * ■ Current input * ■ Status input * ■ PFS output *
Factory setting	Off

Apply I/O config



Navigation	Expert → I/O config. → Apply I/O config (3907)
Description	Use this function to activate the newly configured I/O module type.
Selection	■ No ■ Yes

* Visibility depends on order options or device settings

Factory setting	No
Alteration code 	
Navigation	  Expert → I/O config. → Alteration code (2762)
Description	Use this function to enter the ordered activation code to activate the I/O configuration change.
User entry	Positive integer
Factory setting	0
Additional information	<i>Description</i> The I/O configuration is changed in the I/O type parameter (→  94).

3.4 "Input" submenu

Navigation   Expert → Input

► Input

► Current input 1 to n

→  95

► Status input 1 to n

→  98

3.4.1 "Current input 1 to n" submenu

Navigation   Expert → Input → Current input 1 to n

► Current input 1 to n

Terminal no. (1611-1 to n)

→  96

Signal mode (1610-1 to n)

→  96

Current span (1605-1 to n)

→  96

0/4 mA value (1606-1 to n)

→  97

20 mA value (1607-1 to n)

→  97

Failure mode (1601-1 to n)	→ 98
Failure value (1602-1 to n)	→ 98

Terminal no.

Navigation	Expert → Input → Current input 1 to n → Terminal no. (1611-1 to n)
Description	Displays the terminal numbers used by the current input module.
User interface	■ Not used ■ 24-25 (I/O 2)
Additional information	<i>"Not used" option</i> The current input module does not use any terminal numbers.

Signal mode



Navigation	Expert → Input → Current input 1 to n → Signal mode (1610-1 to n)
Prerequisite	The measuring device is not approved for use in the hazardous area with type of protection Ex-i.
Description	Use this function to select the signal mode for the current input.
Selection	■ Passive ■ Active*
Factory setting	Active

Current span



Navigation	Expert → Input → Current input 1 to n → Current span (1605-1 to n)
Description	Use this function to select the current range for the process value output and the upper and lower level for signal on alarm.
Selection	■ 4...20 mA ■ 4...20 mA NAMUR ■ 4...20 mA US ■ 0...20 mA

* Visibility depends on order options or device settings

Factory setting

Country-specific:

- 4...20 mA NAMUR
- 4...20 mA US

Additional information

Examples

 Sample values for the current range: **Current span** parameter (→  103)

0/4 mA value

Navigation   Expert → Input → Current input 1 to n → 0/4 mA value (1606–1 to n)

Description Use this function to enter a value for the 4 mA current.

User entry Signed floating-point number

Factory setting 0

Additional information

Current input behavior

The current input behaves differently depending on the settings configured in the following parameters:

- Current span (→  96)
- Failure mode (→  98)

Configuration examples

 Pay attention to the configuration examples for **4 mA value** parameter (→  105).

20 mA value

Navigation   Expert → Input → Current input 1 to n → 20 mA value (1607–1 to n)

Description Use this function to enter a value for the 20 mA current.

User entry Signed floating-point number

Factory setting Depends on country and nominal diameter

Additional information

Configuration examples

 Pay attention to the configuration examples for **4 mA value** parameter (→  105).

Failure mode

Navigation	  Expert → Input → Current input 1 to n → Failure mode (1601–1 to n)
Description	Use this function to select the input behavior when measuring a current outside the configured Current span parameter (→  96).
Selection	■ Alarm ■ Last valid value ■ Defined value
Factory setting	Alarm
Additional information	<i>Options</i> ■ Alarm An error message is set. ■ Last valid value The last valid measured value is used. ■ Defined value A user-defined measured value is used (Failure value parameter (→  98)).

Failure value

Navigation	  Expert → Input → Current input 1 to n → Failure value (1602–1 to n)
Prerequisite	In the Failure mode parameter (→  98), the Defined value option is selected.
Description	Use this function to enter the value that the device uses if it does not receive an input signal from the external device, or if the input signal is invalid.
User entry	Signed floating-point number
Factory setting	0

3.4.2 "Status input 1 to n" submenu

Navigation   Expert → Input → Status input 1 to n

► Status input 1 to n

Terminal no. (1358–1 to n)

→  99

Assign stat.inp. (1352–1 to n)

→  99

Val.stat.inp. (1353–1 to n)

→  100

Active level (1351-1 to n)	→ 100
Response time (1354-1 to n)	→ 100

Terminal no.

Navigation	 Expert → Input → Status input 1 to n → Terminal no. (1358-1 to n)
Description	Displays the terminal numbers used by the status input module.
User interface	■ Not used ■ 24-25 (I/O 2)
Additional information	<i>"Not used" option</i> The status input module does not use any terminal numbers.

Assign stat.inp.

Navigation	 Expert → Input → Status input 1 to n → Assign stat.inp. (1352-1 to n)
Description	Use this function to select the function for the status input.
Selection	■ Off ■ Reset totaliz. 1 ■ Reset totaliz. 2 ■ Reset totaliz. 3 ■ Reset all tot. ■ Flow override
Factory setting	Off
Additional information	<i>Selection</i> ■ Off The status input is switched off. ■ Reset totaliz. 1...3 The individual totalizers are reset. ■ Reset all tot. All totalizers are reset. ■ Flow override The Flow override (→ 70) is activated.  Note on the Flow override (→ 70): ■ The Flow override (→ 70) is enabled as long as the level is at the status input (continuous signal). ■ All other assignments react to a change in level (pulse) at the status input.

Val.stat.inp.

Navigation	  Expert → Input → Status input 1 to n → Val.stat.inp. (1353–1 to n)
Description	Displays the current input signal level.
User interface	■ High ■ Low

Active level



Navigation	  Expert → Input → Status input 1 to n → Active level (1351–1 to n)
Description	Use this function to determine the input signal level at which the assigned function is activated.
Selection	■ High ■ Low
Factory setting	High

Response time



Navigation	  Expert → Input → Status input 1 to n → Response time (1354–1 to n)
Description	Use this function to enter the minimum time period for which the input signal level must be present before the selected function is activated.
User entry	5 to 200 ms
Factory setting	50 ms

3.5 "Output" submenu

Navigation   Expert → Output

► Output

► Curr.output 1 to n

→  101

► PFS output 1 to n

→  115

► Relay output 1 to n

→  137

3.5.1 "Current output 1 to n" submenu

Navigation  Expert → Output → Curr.output 1 to n

► Curr.output 1 to n		
Terminal no. (0379-1 to n)	→ 	101
Signal mode (0377-1 to n)	→ 	102
Assign curr. 1 to n (0359-1 to n)	→ 	102
Current span (0353-1 to n)	→ 	103
Fixed current (0365-1 to n)	→ 	104
0/4 mA value (0367-1 to n)	→ 	105
20 mA value (0372-1 to n)	→ 	106
Measuring mode (0351-1 to n)	→ 	107
Damping out. 1 to n (0363-1 to n)	→ 	112
Response time (0378-1 to n)	→ 	112
Failure mode (0364-1 to n)	→ 	113
Failure current (0352-1 to n)	→ 	114
Output curr. 1 to n (0361-1 to n)	→ 	115
Measur. curr. 1 to n (0366-1 to n)	→ 	115

Terminal no.

Navigation	 Expert → Output → Curr.output 1 to n → Terminal no. (0379-1 to n)
Description	Displays the terminal numbers used by the current output module.
User interface	■ Not used ■ 24-25 (I/O 2)
Additional information	"Not used" option The current output module does not use any terminal numbers.

Signal mode 	
Navigation	  Expert → Output → Curr.output 1 to n → Signal mode (0377–1 to n)
Description	Use this function to select the signal mode for the current output.
Selection	■ Passive * ■ Active *
Factory setting	Active

Assign curr. 1 to n 	
Navigation	  Expert → Output → Curr.output 1 to n → Assign curr. 1 to n (0359–1 to n)
Description	Use this function to select a process variable for the current output.  Detailed description of the options Oscil. frequency, Oscil. amplitude, Oscil. damping and Signal asymmetry: Value 1 display parameter (→  18)
Selection	■ Off * ■ Mass flow ■ Volume flow ■ Correct.vol.flow * ■ Target mass flow * ■ Carrier mass fl. * ■ Target vol. flow * ■ Carrier vol. fl. * ■ Targ.corr.vol.fl * ■ Carr.corr.vol.fl * ■ Density ■ Ref.density * ■ Ref.dens.altern. * ■ GSV flow * ■ GSVa * ■ NSV flow * ■ NSVa * ■ S&W volume flow * ■ Water cut * ■ Oil density * ■ Water density * ■ Oil mass flow ■ Water mass flow * ■ Oil volume flow * ■ Water vol. flow * ■ Oil corr.vol.fl. * ■ Water corr.v.fl. * ■ Concentration * ■ Dynam. viscosity * ■ Kinematic visc. * ■ TempCompDynVisc * ■ TempCompKinVisc *

* Visibility depends on order options or device settings

- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. freq. 1 *
- Osc. ampl. 0 *
- Osc. ampl. 1 *
- Freq. fluct. 0 *
- Freq. fluct. 1 *
- Osc. damping 0 *
- Osc. damping 1 *
- Osc.damp.fluct 0 *
- Osc.damp.fluct 1 *
- Signal asymmetry *
- Exc. current 0 *
- Exc. current 1 *
- HBSI *
- Pressure

Factory setting Mass flow

Current span



Navigation Expert → Output → Curr.output 1 to n → Current span (0353-1 to n)

Description Use this function to select the current range for the process value output and the upper and lower level for signal on alarm.

Selection

- 4...20 mA NAMUR
- 4...20 mA US
- 4...20 mA
- 0...20 mA
- Fixed current

Factory setting Country-specific:

- 4...20 mA NAMUR
- 4...20 mA US

* Visibility depends on order options or device settings

Additional information

Description

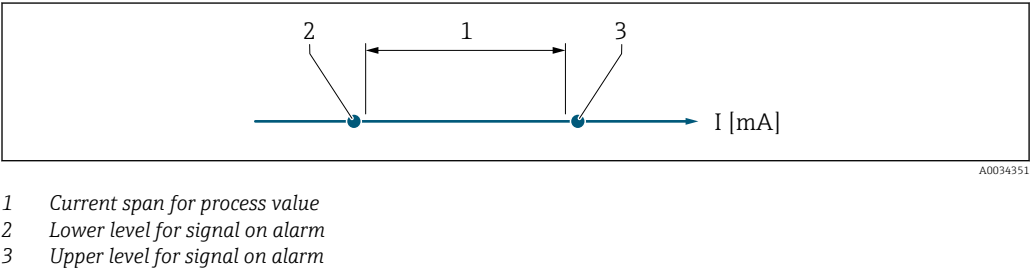
- 
- In the event of a device alarm, the current output adopts the value specified in the **Failure mode** parameter (→  113).
 - If the measured value is outside the measuring range, the diagnostic message **△S441 Curr.output 1 to n** is displayed.
 - The measuring range is specified via the **0/4 mA value** parameter (→  105) and **20 mA value** parameter (→  106).

"Fixed current" option

The current value is set via the **Fixed current** parameter (→  104).

Example

Shows the relationship between the current span for the output of the process variable and the lower and upper alarm levels:



Selection

Options	1	2	3
4...20 mA NAMUR	3.8 to 20.5 mA	< 3.6 mA	> 21.95 mA
4...20 mA US	3.9 to 20.8 mA US	< 3.6 mA	> 21.95 mA
4...20 mA	4 to 20.5 mA	< 3.6 mA	> 21.95 mA
0...20 mA	0 to 20.5 mA	< 0 mA	> 21.95 mA

- 
- If the flow exceeds or falls below the upper or lower signal on alarm level, the diagnostic message **△S441 Curr.output 1 to n** is displayed.

Fixed current

Navigation

  Expert → Output → Curr.output 1 to n → Fixed current (0365-1 to n)

Prerequisite

The **Fixed current** option is selected in the **Current span** parameter (→  103).

Description

Use this function to enter a constant current value for the current output.

User entry

0 to 22.5 mA

Factory setting

22.5 mA

**0/4 mA value****Navigation**

Expert → Output → Curr.output 1 to n → 0/4 mA value (0367-1 to n)

Prerequisite

One of the following options is selected in the **Current span** parameter (→ 103):

- 4...20 mA NAMUR
- 4...20 mA US
- 4...20 mA
- 0...20 mA

Description

Use this function to enter a value for the 0/4 mA current.

User entry

Signed floating-point number

Factory setting

Country-specific:

- 0 kg/h
- 0 lb/min

Additional information*Description*

Positive and negative values are permitted depending on the process variable assigned in the **Assign curr.** parameter (→ 102). In addition, the value can be greater than or smaller than the value assigned for the 20 mA current in the **20 mA value** parameter (→ 106).

Dependency

The unit depends on the process variable selected in the **Assign curr.** parameter (→ 102).

Current output behavior

The current output behaves differently depending on the settings configured in the following parameters:

- Current span (→ 103)
- Failure mode (→ 113)

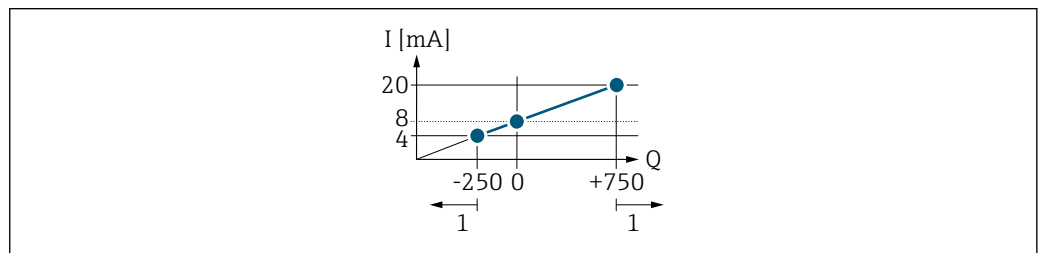
Configuration examples

Some examples of parameter settings and their effect on the current output are given in the following section.

Configuration example A

Measuring mode with **Forward flow** option

- **0/4 mA value** parameter (→ 105) = not equal to zero flow (e.g. -250 m³/h)
- **20 mA value** parameter (→ 106) = not equal to zero flow (e.g. +750 m³/h)
- Calculated current value = 8 mA at zero flow



A0013757

Q Flow

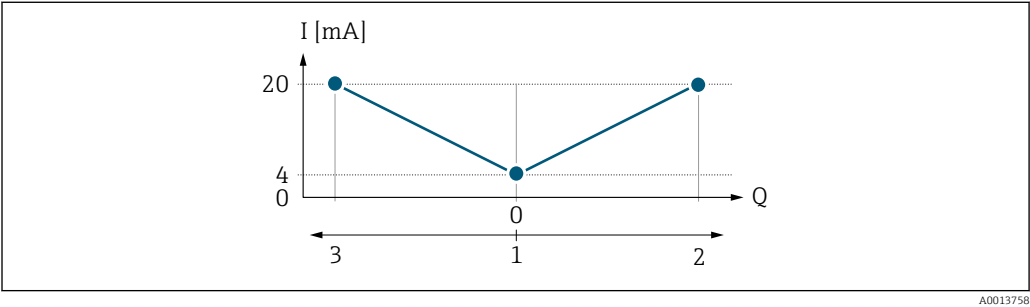
I Current

1 Measuring range is exceeded or undershot

The operational range of the measuring device is defined by the values entered for the **0/4 mA value** parameter (→  105) and **20 mA value** parameter (→  106). If the effective flow exceeds or falls below this operational range, the diagnostic message **△S441 Curr.output 1 to n** is displayed.

Configuration example B

Measuring mode with **Forward/Reverse** option



- I* Current
- Q* Flow
- 1* Value assigned to the 0/4 mA current
- 2* Forward flow
- 3* Reverse flow

The current output signal is independent of the direction of flow (absolute amount of the measured variable). The values for the **0/4 mA value** parameter (→  105) and **20 mA value** parameter (→  106) must have the same sign. The value for the **20 mA value** parameter (→  106) (e.g. reverse flow) corresponds to the mirrored value for the **20 mA value** parameter (→  106) (e.g. forward flow).

Configuration example C

Measuring mode with **Rev. flow comp.** option

If flow is characterized by severe fluctuations (e.g. when using reciprocating pumps), flow components outside the measuring range are buffered, balanced and output after a maximum delay of 60 s →  107.

20 mA value

Navigation	  Expert → Output → Curr.output 1 to n → 20 mA value (0372-1 to n)
Prerequisite	One of the following options is selected in the Current span parameter (→  103): ■ 4...20 mA NAMUR ■ 4...20 mA US ■ 4...20 mA ■ 0...20 mA
Description	Use this function to enter a value for the 20 mA current.
User entry	Signed floating-point number
Factory setting	Depends on country and nominal diameter→  274
Additional information	<i>Description</i> Positive and negative values are permitted depending on the process variable assigned in the Assign curr. parameter (→  102). In addition, the value can be greater than or

smaller than the value assigned for the 0/4 mA current in the **0/4 mA value** parameter (→  105).

Dependency

 The unit depends on the process variable selected in the **Assign curr.** parameter (→  102).

Example

- Value assigned to 0/4 mA = -250 m³/h
- Value assigned to 20 mA = +750 m³/h
- Calculated current value = 8 mA (at zero flow)

If the **Forward/Reverse** option is selected in the **Measuring mode** parameter (→  107), different signs cannot be entered for the values of the **0/4 mA value** parameter (→  105) and **20 mA value** parameter (→  106). The diagnostic message **△S441 Curr.output 1 to n** is displayed.

Configuration examples

 Observe the configuration examples for the **0/4 mA value** parameter (→  105).

Measuring mode



Navigation

  Expert → Output → Curr.output 1 to n → Measuring mode (0351-1 to n)

Prerequisite

In the **Assign curr.** parameter (→  102), one of the following options is selected:

- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Dynam. viscosity *
- Kinematic visc. *
- TempCompDynVisc *
- TempCompKinVisc *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. freq. 1 *
- Osc. ampl. 0 *
- Osc. ampl. 1 *
- Freq. fluct. 0
- Freq. fluct. 1 *
- Osc. damping 0
- Osc. damping 1 *
- Osc.damp.fluct 0
- Osc.damp.fluct 1 *
- Signal asymmetry

* Visibility depends on order options or device settings

- Exc. current 0
- Exc. current 1 *
- HBSI *

i Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry: Value 1 display** parameter (→  18)

In the **Current span** parameter (→  103), one of the following options is selected:

- 4...20 mA NAMUR
- 4...20 mA US
- 4...20 mA
- 0...20 mA

Description

Use this function to select the measuring mode for the current output.

Selection

- Forward flow
- Forward/Reverse *
- Rev. flow comp.

Factory setting

Forward flow

Additional information

Description

i The process variable that is assigned to the current output via the **Assign curr.** parameter (→  102) is displayed below the parameter.

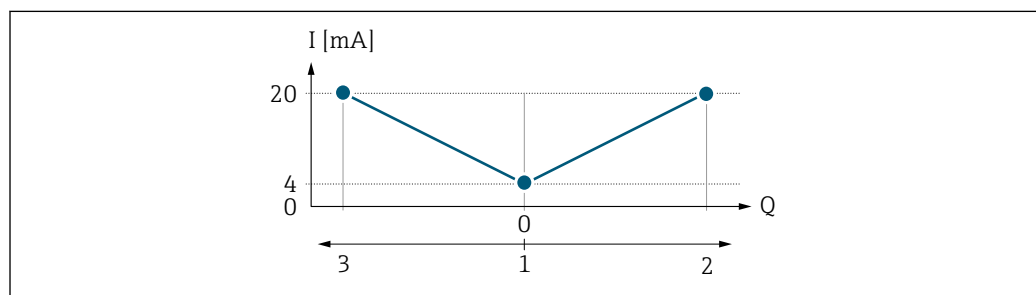
"Forward flow" option

The current output signal is proportional to the process variable assigned. The measuring range is defined by the values that are assigned to the 0/4 mA and 20 mA current value.

The flow components outside the scaled measuring range are taken into account for signal output as follows:

- Both values are defined such that they are not equal to zero flow e.g.:
 - 0/4 mA current value = $-5 \text{ m}^3/\text{h}$
 - 20 mA current value = $10 \text{ m}^3/\text{h}$
- If the effective flow exceeds or falls below this measuring range, the diagnostic message **△S441 Curr.output 1 to n** is displayed.

"Forward/Reverse" option



A0013758

- I Current
- Q Flow
- 1 Value assigned to the 0/4 mA current
- 2 Forward flow
- 3 Reverse flow

* Visibility depends on order options or device settings

- The current output signal is independent of the direction of flow (absolute amount of the measured variable). The values for the **0/4 mA value** parameter (→  105) and **20 mA value** parameter (→  106) must have the same sign.
- The value for the **20 mA value** parameter (→  106) (e.g. reverse flow) corresponds to the mirrored value for the **20 mA value** parameter (→  106) (e.g. forward flow).

"Rev. flow comp." option

The **Rev. flow comp.** option is primarily used to compensate for abrupt reverse flow which can occur in connection with positive displacement pumps as a result of wear or high viscosity. The reverse flows are recorded in a buffer and balanced against forward flow the next time flow is in the forward direction.

If buffering cannot be processed within approx. 60 s, the diagnostic message **△S441 Curr.output 1 to n** is displayed.

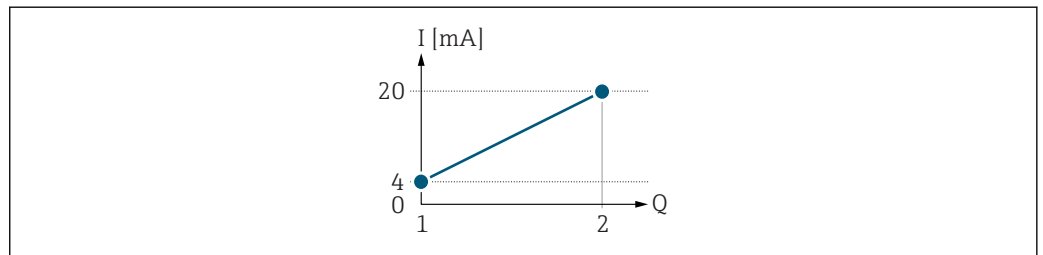
Flow values can aggregate in the buffer in the event of prolonged and unwanted fluid reverse flow. However, these flows are not taken into consideration by the current output configuration, i.e. the reverse flow is not compensated.

If this option is set, the measuring device does not attenuate the flow signal. The flow signal is not attenuated.

Examples of how the current output behaves

Example 1

Defined measuring range: lower range value and upper range value with the **same** sign



A0028084

 2 Measuring range

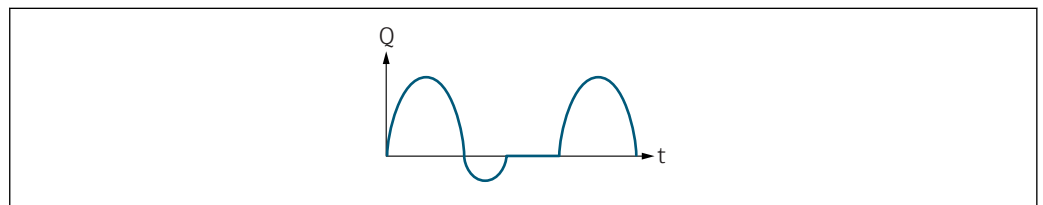
I Current

Q Flow

1 Lower range value (value assigned to 0/4 mA current)

2 Upper range value (value assigned to 20 mA current)

With the following flow response:



A0028091

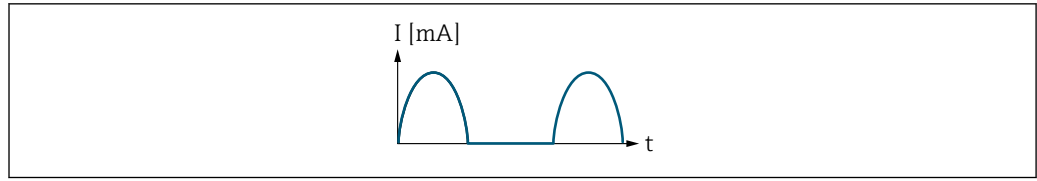
 3 Flow response

Q Flow

t Time

With **Forward flow** option

The current output signal is proportional to the process variable assigned. The flow components outside the scaled measuring range are not taken into account for signal output:.

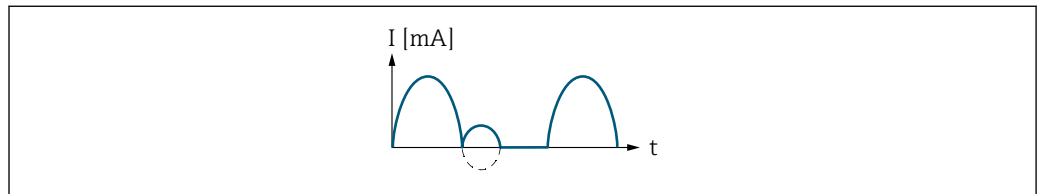


A0028092

I Current
 t Time

With **Forward/Reverse** option

The current output signal is independent of the direction of flow.

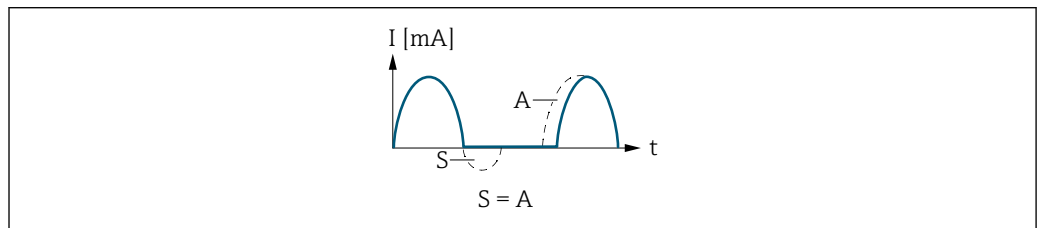


A0028093

I Current
 t Time

With **Rev. flow comp.** option

Flow components outside the span are buffered, balanced and output after a maximum delay of 60 s.

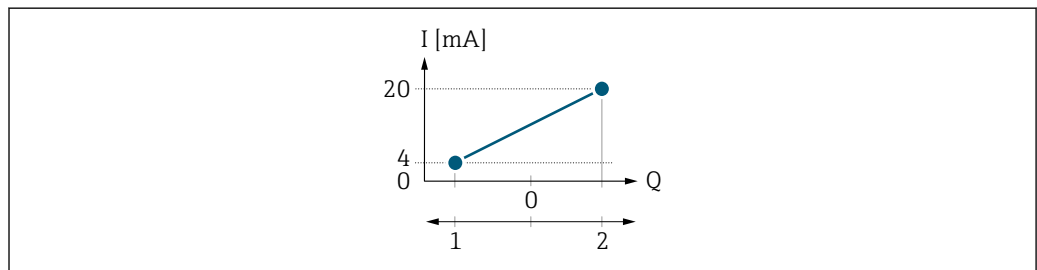


A0028094

I Current
 t Time
 S Flow components saved
 A Balancing of saved flow components

Example 2

Defined measuring range: lower range value and upper range value with **different** signs

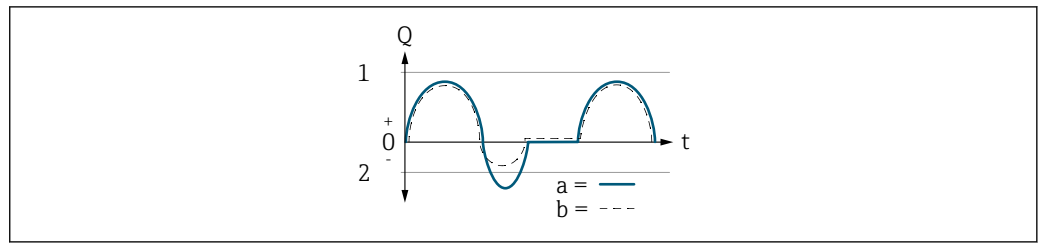


A0028095

4 Measuring range

I Current
 Q Flow
 1 Lower range value (value assigned to 0/4 mA current)
 2 Upper range value (value assigned to 20 mA current)

With flow a (–) outside, b (– –) inside the measuring range

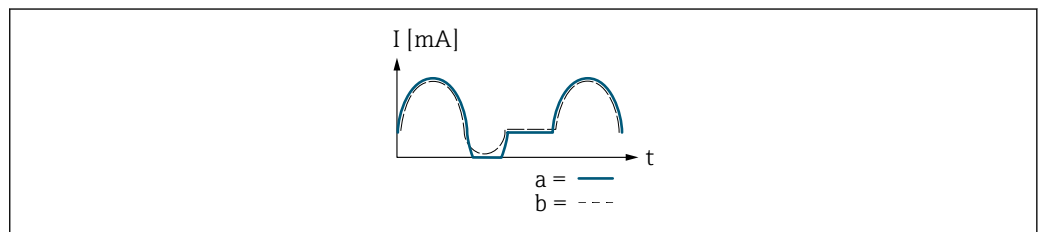


A0028098

Q Flow
t Time
 1 Lower range value (value assigned to 0/4 mA current)
 2 Upper range value (value assigned to 20 mA current)

With **Forward flow** option

- a (–): The flow components outside the scaled measuring range cannot be taken into account for signal output.
The diagnostic message Δ **S441 Curr.output 1 to n** is displayed.
- b (– –): The current output signal is proportional to the process variable assigned.



A0028100

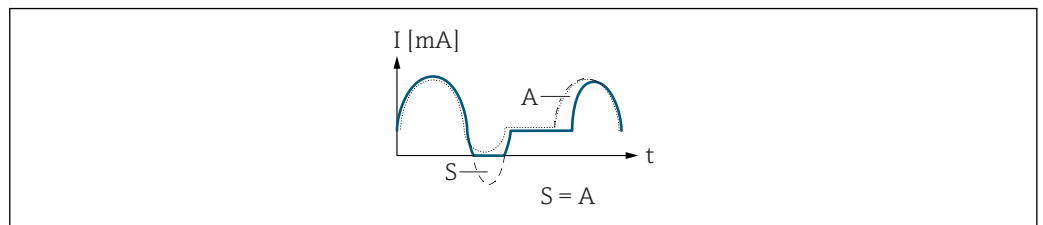
I Current
t Time

With **Forward/Reverse** option

This option is not possible in this case as the values for the **0/4 mA value** parameter ($\rightarrow$ 105) and **20 mA value** parameter ($\rightarrow$ 106) have different signs.

With **Rev. flow comp.** option

Flow components outside the span are buffered, balanced and output after a maximum delay of 60 s.



A0028101

I Current
t Time
S Flow components saved
A Balancing of saved flow components

Damping out. 1 to n 	
Navigation	  Expert → Output → Curr.output 1 to n → Damping out. 1 to n (0363–1 to n)
Prerequisite	A process variable is selected in the Assign curr. parameter (→  102) and one of the following options is selected in the Current span parameter (→  103): ■ 4...20 mA NAMUR ■ 4...20 mA US ■ 4...20 mA ■ 0...20 mA
Description	Use this function to enter a time constant for the reaction time of the current output signal to fluctuations in the measured value caused by process conditions.
User entry	0.0 to 999.9 s
Factory setting	1.0 s
Additional information	<i>User entry</i> Use this function to enter a time constant (PT1 element ⁶⁾) for current output damping: ■ If a low time constant is entered, the current output reacts particularly quickly to fluctuating measured variables. ■ On the other hand, the current output reacts more slowly if a high time constant is entered.  Damping is switched off if 0 is entered (factory setting).
Response time	

Navigation	  Expert → Output → Curr.output 1 to n → Response time (0378–1 to n)
Prerequisite	One of the following options is selected in the Assign curr. parameter (→  102): ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. * ■ Density ■ Ref.density ■ Concentration * ■ Dynam. viscosity * ■ Kinematic visc. * ■ TempCompDynVisc * ■ TempCompKinVisc * ■ Temperature ■ Carr. pipe temp. * ■ Electronic temp. ■ Osc. freq. 0 ■ Osc. freq. 1 *

6) proportional transmission behavior with first order delay
 * Visibility depends on order options or device settings

- Osc. ampl. 0 *
- Osc. ampl. 1 *
- Freq. fluct. 0
- Freq. fluct. 1 *
- Osc. damping 0
- Osc. damping 1 *
- Osc.damp.fluct 0
- Osc.damp.fluct 1 *
- Signal asymmetry
- Exc. current 0
- Exc. current 1 *
- HBSI *



Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry**: **Value 1 display** parameter (→  18)

One of the following options is selected in the **Current span** parameter (→  103):

- 4...20 mA NAMUR
- 4...20 mA US
- 4...20 mA
- 0...20 mA

Description	Displays the response time. This specifies how quickly the current output reaches the measured value change of 63 % of 100 % of the measured value change.
User interface	Positive floating-point number
Additional information	<i>Description</i>  The response time is made up of the time specified for the following dampings: ■ Current output damping →  112 - and ■ Depending on the measured variable assigned to the output. – Flow damping - or – Density damping - or – Temperature damping

Failure mode



Navigation	  Expert → Output → Curr.output 1 to n → Failure mode (0364–1 to n)
Prerequisite	A process variable is selected in the Assign curr. parameter (→  102) and one of the following options is selected in the Current span parameter (→  103): ■ 4...20 mA NAMUR ■ 4...20 mA US ■ 4...20 mA ■ 0...20 mA
Description	Use this function to select the value of the current output in the event of a device alarm.

* Visibility depends on order options or device settings

Selection	■ Min. ■ Max. ■ Last valid value ■ Actual value ■ Defined value
Factory setting	Max.
Additional information	<i>Description</i>  This setting does not affect the failsafe mode of other outputs and totalizers. This is specified in separate parameters. <i>"Min." option</i> The current output adopts the value of the lower level for signal on alarm.  The signal on alarm level is defined via the Current span parameter (→  103). <i>"Max." option</i> The current output adopts the value of the upper level for signal on alarm.  The signal on alarm level is defined via the Current span parameter (→  103). <i>"Last valid value" option</i> The current output adopts the last measured value that was valid before the device alarm occurred. <i>"Actual value" option</i> The current output adopts the measured value on the basis of the current flow measurement; the device alarm is ignored. <i>"Defined value" option</i> The current output adopts a defined measured value.  The measured value is defined via the Failure current parameter (→  114).

Failure current


Navigation	  Expert → Output → Curr.output 1 to n → Failure current (0352-1 to n)
Prerequisite	The Defined value option is selected in the Failure mode parameter (→  113).
Description	Use this function to enter a fixed value that the current output adopts in the event of a device alarm.
User entry	0 to 22.5 mA
Factory setting	22.5 mA

Output curr. 1 to n	
Navigation	 Expert → Output → Curr.output 1 to n → Output curr. 1 to n (0361–1 to n)
Description	Displays the current value currently calculated for the current output.
User interface	3.59 to 22.5 mA

Measur. curr. 1 to n	
Navigation	 Expert → Output → Curr.output 1 to n → Measur. curr. 1 to n (0366–1 to n)
Description	Use this function to display the actual measured value of the output current.
User interface	0 to 30 mA

3.5.2 "Pulse/frequency/switch output 1 to n" submenu

Navigation  Expert → Output → PFS output 1 to n

► PFS output 1 to n	
Terminal no. (0492–1 to n)	→  116
Signal mode (0490–1 to n)	→  117
Operating mode (0469–1 to n)	→  117
Assign pulse 1 to n (0460–1 to n)	→  119
Value per pulse (0455–1 to n)	→  119
Pulse width (0452–1 to n)	→  120
Measuring mode (0457–1 to n)	→  121
Failure mode (0480–1 to n)	→  121
Pulse output 1 to n (0456–1 to n)	→  122
Assign freq. (0478–1 to n)	→  123
Min. freq. value (0453–1 to n)	→  124

Max. freq. value (0454-1 to n)	→  124
Val. at min.freq (0476-1 to n)	→  124
Val. at max.freq (0475-1 to n)	→  125
Measuring mode (0479-1 to n)	→  125
Damping out. 1 to n (0477-1 to n)	→  126
Response time (0491-1 to n)	→  127
Failure mode (0451-1 to n)	→  128
Failure freq. (0474-1 to n)	→  129
Output freq. 1 to n (0471-1 to n)	→  129
Switch out funct (0481-1 to n)	→  130
Assign diag. beh (0482-1 to n)	→  130
Assign limit (0483-1 to n)	→  131
Switch-on value (0466-1 to n)	→  133
Switch-off value (0464-1 to n)	→  133
Assign dir.check (0484-1 to n)	→  134
Assign status (0485-1 to n)	→  134
Switch-on delay (0467-1 to n)	→  135
Switch-off delay (0465-1 to n)	→  135
Failure mode (0486-1 to n)	→  135
Switch status 1 to n (0461-1 to n)	→  136
Invert outp.sig. (0470-1 to n)	→  136

Terminal no.

Navigation

  Expert → Output → PFS output 1 to n → Terminal no. (0492-1 to n)

Description

Displays the terminal numbers used by the pulse/frequency/switch output module.

- User interface**
- Not used
 - 24-25 (I/O 2)

Additional information *"Not used" option*
 The pulse/frequency/switch output module does not use any terminal numbers.

Signal mode



Navigation Expert → Output → PFS output 1 to n → Signal mode (0490–1 to n)

Description Use this function to select the signal mode for the pulse/frequency/switch output.

- Selection**
- Passive
 - Active

Factory setting Passive

Operating mode



Navigation Expert → Output → PFS output 1 to n → Operating mode (0469–1 to n)

Description Use this function to select the operating mode of the output as a pulse, frequency or switch output.

- Selection**
- Pulse
 - Frequency
 - Switch

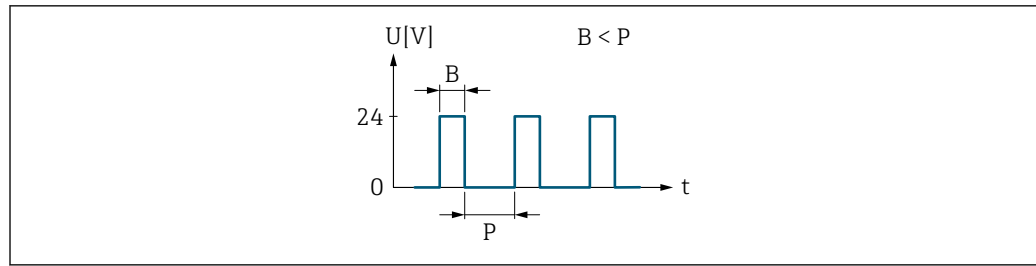
Factory setting Pulse

Additional information *"Pulse" option*
 Quantity-dependent pulse with configurable pulse width

- Whenever a specific mass, volume, corrected volume, target mass or carrier mass is reached (pulse value), a pulse is output, the duration of which was set previously (pulse width).
- The pulses are never shorter than the set duration.

Example

- Flow rate approx. 100 g/s
- Pulse value 0.1 g
- Pulse width 0.05 ms
- Pulse rate 1000 Impuls/s



A0026883

5 Quantity-proportional pulse (pulse value) with pulse width to be configured

B Pulse width entered

P Pauses between the individual pulses

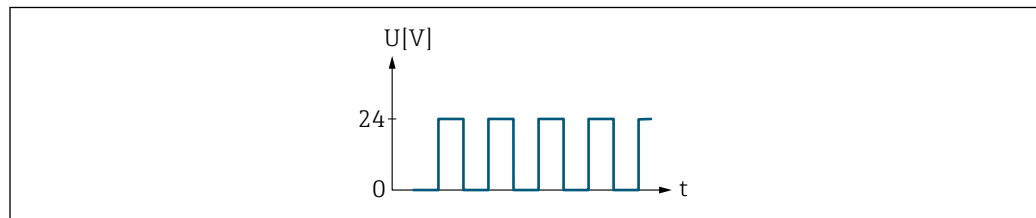
"Frequency" option

Flow-proportional frequency output with 1:1 on/off ratio

An output frequency is output that is proportional to the value of a process variable, such as mass flow, volume flow, corrected volume flow, target mass flow, carrier mass flow, density, reference density, concentration, dynamic viscosity, kinematic viscosity, temperature-compensated dynamic viscosity, temperature-compensated kinematic viscosity, temperature, carrier tube temperature, electronic temperature, vibration frequency, frequency fluctuation, oscillation amplitude, oscillation damping, oscillation damping fluctuation, signal asymmetry or excitation current.

Example

- Flow rate approx. 100 g/s
- Max. frequency 10 kHz
- Flow rate at max. frequency 1000 g/s
- Output frequency approx. 1000 Hz



A0026886

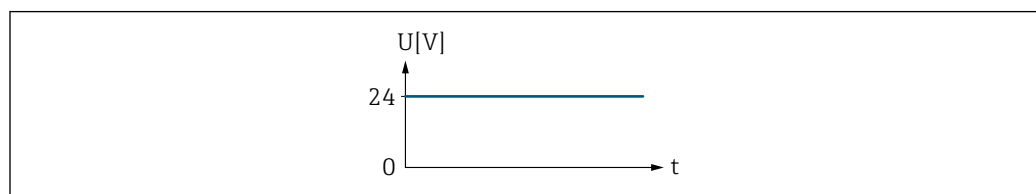
6 Flow-proportional frequency output

"Switch" option

Contact for displaying a condition (e.g. alarm or warning if a limit value is reached)

Example

Alarm response without alarm

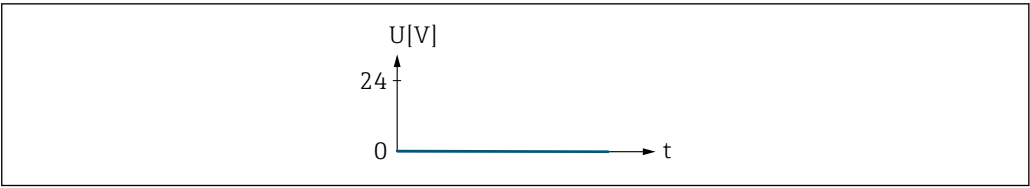


A0026884

7 No alarm, high level

Example

Alarm response in case of alarm



8 Alarm, low level

A0026885

Assign pulse 1 to n

Navigation	Expert → Output → PFS output 1 to n → Assign pulse 1 to n (0460–1 to n)
Prerequisite	The Pulse option is selected in the Operating mode parameter (→ 117) parameter.
Description	Use this function to select the process variable for the pulse output.
Selection	- Off - Mass flow - Volume flow - Correct.vol.flow * - Target mass flow * - Carrier mass fl. * - Target vol. flow * - Carrier vol. fl. * - Targ.corr.vol.fl * - Carr.corr.vol.fl * - GSV flow * - GSVa * - NSV flow * - NSVa * - S&W volume flow * - Oil mass flow * - Water mass flow * - Oil volume flow * - Water vol. flow * - Oil corr.vol.fl. * - Water corr.v.fl. *
Factory setting	Off

Value per pulse

Navigation	Expert → Output → PFS output 1 to n → Value per pulse (0455–1 to n)
Prerequisite	The Pulse option is selected in the Operating mode parameter (→ 117) and a process variable is selected in the Assign pulse parameter (→ 119).
Description	Use this function to enter the value for the measured value that a pulse is equivalent to.

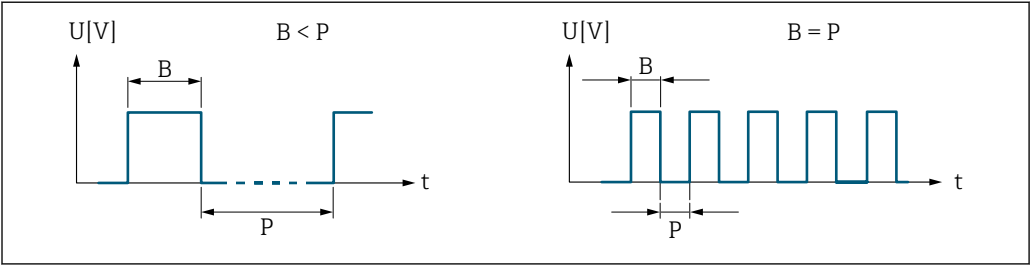
* Visibility depends on order options or device settings

User entry	Signed floating-point number
Factory setting	Depends on country and nominal diameter→ 📄 275
Additional information	<i>User entry</i> Weighting of the pulse output with a quantity. The lower the pulse value, the ▪ better the resolution. ▪ the higher the frequency of the pulse response.

Pulse width

🔒

Navigation	🔍📄 Expert → Output → PFS output 1 to n → Pulse width (0452-1 to n)
Prerequisite	The Pulse option is selected in the Operating mode parameter (→ 📄 117) and a process variable is selected in the Assign pulse parameter (→ 📄 119).
Description	Use this function to enter the duration of the output pulse.
User entry	0.05 to 2 000 ms
Factory setting	100 ms
Additional information	<i>Description</i> ▪ Define how long a pulse is (duration). ▪ The maximum pulse rate is defined by $f_{\max} = 1 / (2 \times \text{pulse width})$. ▪ The interval between two pulses lasts at least as long as the set pulse width. ▪ The maximum flow is defined by $Q_{\max} = f_{\max} \times \text{pulse value}$. ▪ If the flow exceeds these limit values, the measuring device displays the diagnostic message ⚠️S443 Pulse output 1 to n.



A0026882

B Pulse width entered
P Pauses between the individual pulses

- Example*
- Pulse value: 0.1 g
 - Pulse width: 0.1 ms
 - $f_{\max}$: $1 / (2 \times 0.1 \text{ ms}) = 5 \text{ kHz}$
 - $Q_{\max}$: $5 \text{ kHz} \times 0.1 \text{ g} = 0.5 \text{ kg/s}$

Measuring mode	
Navigation	 Expert → Output → PFS output 1 to n → Measuring mode (0457–1 to n)
Prerequisite	In the Operating mode parameter (→  117), the Pulse option is selected, and one of the following options is selected in the Assign pulse parameter (→  119): ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. *
Description	Use this function to select the measuring mode for the pulse output.
Selection	■ Forward flow ■ Forward/Reverse ■ Reverse flow ■ Rev. flow comp.
Factory setting	Forward flow
Additional information	<i>Selection</i> ■ Forward flow Positive flow is output, negative flow is not output. ■ Forward/Reverse Positive and negative flow are output (absolute value), but a distinction is not made between positive and negative flow. ■ Reverse flow Negative flow is output, positive flow is not output. ■ Rev. flow comp. The flow components outside the span are buffered, balanced and output after a maximum delay of 60 s.  For a detailed description of the options available, see the Measuring mode parameter (→  107) <i>Examples</i>  For a detailed description of the configuration examples, see the Measuring mode parameter (→  107)
Failure mode	

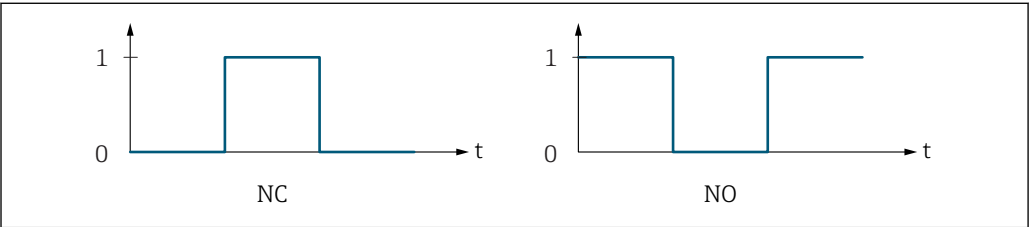
Navigation	 Expert → Output → PFS output 1 to n → Failure mode (0480–1 to n)
Prerequisite	The Pulse option is selected in the Operating mode parameter (→  117) and a process variable is selected in the Assign pulse parameter (→  119).
Description	Use this function to select the failure mode of the pulse output in the event of a device alarm.

* Visibility depends on order options or device settings

Selection	■ Actual value ■ No pulses
Factory setting	No pulses
Additional information	Description The dictates of safety render it advisable to ensure that the pulse output shows a predefined behavior in the event of a device alarm. Selection ■ Actual value In the event of a device alarm, the pulse output continues on the basis of the current flow measurement. The fault is ignored. ■ No pulses In the event of a device alarm, the pulse output is "switched off". NOTICE! A device alarm is a measuring device error that must be taken seriously. It can affect the measurement quality such that the quality can no longer be guaranteed. The Actual value option is only recommended if it can be guaranteed that all possible alarm conditions will not affect the measurement quality.

Pulse output 1 to n

Navigation	 Expert → Output → PFS output 1 to n → Pulse output 1 to n (0456–1 to n)
Prerequisite	The Pulse option is selected in the Operating mode parameter (→  117) parameter.
Description	Displays the pulse frequency currently output.
User interface	Positive floating-point number
Additional information	Description ■ The pulse output is an open collector output. ■ This is configured at the factory in such a way that the transistor is conductive for the duration of the pulse (NO contact) and is safety-oriented.



A0028726

- 0

Non-conductive
- 1

Conductive
- NC

NC contact (normally closed)
- NO

NO contact (normally open)

The output behavior can be reversed via the **Invert outp.sig.** parameter (→  136) i.e. the transistor does not conduct for the duration of the pulse.

In addition, the behavior of the output in the event of a device alarm (**Failure mode** parameter (→  121)) can be configured.

**Assign freq.****Navigation**

 Expert → Output → PFS output 1 to n → Assign freq. (0478-1 to n)

Prerequisite

The **Frequency** option is selected in the **Operating mode** parameter (→  117) parameter.

Description

Use this function to select the process variable for the frequency output.



Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry: Value 1 display** parameter (→  18)

Selection

- Off
- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Target vol. flow *
- Carrier vol. fl. *
- Targ.corr.vol.fl *
- Carr.corr.vol.fl *
- Density
- Ref.density
- Ref.dens.altern. *
- GSV flow *
- GSVa *
- NSV flow *
- NSVa *
- S&W volume flow *
- Water cut *
- Oil density *
- Water density *
- Oil mass flow *
- Water mass flow *
- Oil volume flow *
- Water vol. flow *
- Oil corr.vol.fl. *
- Water corr.v.fl. *
- Concentration *
- Dynam. viscosity *
- Kinematic visc. *
- TempCompDynVisc *
- TempCompKinVisc *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. freq. 1 *
- Osc. ampl. 0 *
- Osc. ampl. 1 *
- Freq. fluct. 0 *
- Freq. fluct. 1 *
- Osc. damping 0 *
- Osc. damping 1 *

* Visibility depends on order options or device settings

- Osc.damp.fluct 0 *
- Osc.damp.fluct 1 *
- Signal asymmetry *
- Exc. current 0 *
- Exc. current 1 *
- HBSI *
- Pressure

Factory setting Off

Min. freq. value

Navigation   Expert → Output → PFS output 1 to n → Min. freq. value (0453–1 to n)

Prerequisite The **Frequency** option is selected in the **Operating mode** parameter (→  117) and a process variable is selected in the **Assign freq.** parameter (→  123).

Description Use this function to enter the start value frequency.

User entry 0.0 to 10 000.0 Hz

Factory setting 0.0 Hz

Max. freq. value

Navigation   Expert → Output → PFS output 1 to n → Max. freq. value (0454–1 to n)

Prerequisite The **Frequency** option is selected in the **Operating mode** parameter (→  117) and a process variable is selected in the **Assign freq.** parameter (→  123).

Description Use this function to enter the end value frequency.

User entry 0.0 to 10 000.0 Hz

Factory setting 10 000.0 Hz

Val. at min.freq

Navigation   Expert → Output → PFS output 1 to n → Val. at min.freq (0476–1 to n)

Prerequisite The **Frequency** option is selected in the **Operating mode** parameter (→  117) and a process variable is selected in the **Assign freq.** parameter (→  123).

Description Use this function to enter the measured value for the start value frequency.

* Visibility depends on order options or device settings

User entry	Signed floating-point number
Factory setting	Depends on country and nominal diameter
Additional information	<i>Dependency</i>  The entry depends on the process variable selected in the Assign freq. parameter (→  123).

Val. at max.freq



Navigation	  Expert → Output → PFS output 1 to n → Val. at max.freq (0475–1 to n)
Prerequisite	The Frequency option is selected in the Operating mode parameter (→  117) and a process variable is selected in the Assign freq. parameter (→  123).
Description	Use this function to enter the measured value for the end value frequency.
User entry	Signed floating-point number
Factory setting	Depends on country and nominal diameter
Additional information	<i>Description</i> Use this function to enter the maximum measured value at the maximum frequency. The selected process variable is output as a proportional frequency. <i>Dependency</i>  The entry depends on the process variable selected in the Assign freq. parameter (→  123).

Measuring mode



Navigation	  Expert → Output → PFS output 1 to n → Measuring mode (0479–1 to n)
Prerequisite	In the Operating mode parameter (→  117), the Frequency option is selected, and one of the following options is selected in the Assign freq. parameter (→  123): ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. * ■ Density ■ Ref.density ■ Concentration * ■ Dynam. viscosity * ■ Kinematic visc. * ■ TempCompDynVisc * ■ TempCompKinVisc *

* Visibility depends on order options or device settings

- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. freq. 1 *
- Freq. fluct. 0
- Freq. fluct. 1 *
- Osc. ampl. 0 *
- Osc. ampl. 1 *
- Osc. damping 0
- Osc. damping 1 *
- Osc.damp.fluct 0
- Osc.damp.fluct 1 *
- Signal asymmetry
- Exc. current 0
- Exc. current 1 *

 Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry**: **Value 1 display** parameter (→  18)

Description

Use this function to select the measuring mode for the frequency output.

Selection

- Forward flow
- Forward/Reverse
- Rev. flow comp.

Factory setting

Forward flow

Additional information

Selection

 For a detailed description of the options available, see the **Measuring mode** parameter (→  107)

Examples

 For a detailed description of the configuration examples, see the **Measuring mode** parameter (→  107)

Damping out. 1 to n



Navigation

  Expert → Output → PFS output 1 to n → Damping out. 1 to n (0477-1 to n)

Prerequisite

In the **Operating mode** parameter (→  117), the **Frequency** option is selected, and one of the following options is selected in the **Assign freq.** parameter (→  123):

- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Dynam. viscosity *
- Kinematic visc. *

* Visibility depends on order options or device settings

- TempCompDynVisc *
- TempCompKinVisc *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. freq. 1 *
- Freq. fluct. 0
- Freq. fluct. 1 *
- Osc. ampl. 0 *
- Osc. ampl. 1 *
- Osc. damping 0
- Osc. damping 1 *
- Osc.damp.fluct 0
- Osc.damp.fluct 1 *
- Signal asymmetry
- Exc. current 0
- Exc. current 1 *



Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry: Value 1 display** parameter (→ 18)

Description	Use this function to enter a time constant for the reaction time of the output signal to fluctuations in the measured value.
User entry	0 to 999.9 s
Factory setting	0.0 s
Additional information	<i>User entry</i> Use this function to enter a time constant (PT1 element ⁷⁾) for frequency output damping: ■ If a low time constant is entered, the current output reacts particularly quickly to fluctuating measured variables. ■ On the other hand, the current output reacts more slowly if a high time constant is entered. Damping is switched off if 0 is entered (factory setting). The frequency output is subject to separate damping that is independent of all preceding time constants.

Response time

Navigation	Expert → Output → PFS output 1 to n → Response time (0491-1 to n)
Prerequisite	In the Operating mode parameter (→ 117), the Frequency option is selected, and one of the following options is selected in the Assign freq. parameter (→ 123): ■ Mass flow ■ Volume flow ■ Correct.vol.flow ■ Target mass flow * ■ Carrier mass fl. *

* Visibility depends on order options or device settings
 7) proportional transmission behavior with first order delay

- Density
- Ref.density
- Concentration *
- Dynam. viscosity *
- Kinematic visc.
- TempCompDynVisc *
- TempCompKinVisc *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. freq. 1 *
- Freq. fluct. 0
- Freq. fluct. 1 *
- Osc. ampl. 0 *
- Osc. ampl. 1 *
- Osc. damping 0
- Osc. damping 1 *
- Osc.damp.fluct 0
- Osc.damp.fluct 1 *
- Signal asymmetry
- Exc. current 0
- Exc. current 1 *

 Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry**: **Value 1 display** parameter (→  18)

Description Displays the response time. This specifies how quickly the pulse/frequency/switch output reaches the measured value change of 63 % of 100 % of the measured value change.

User interface Positive floating-point number

Additional information *Description*

-  The response time is made up of the time specified for the following dampings:
- Damping of pulse/frequency/switch output →  112 and
 - Depending on the measured variable assigned to the output.
 - Flow damping
 - or
 - Density damping
 - or
 - Temperature damping

Failure mode 

Navigation  Expert → Output → PFS output 1 to n → Failure mode (0451–1 to n)

Prerequisite The **Frequency** option is selected in the **Operating mode** parameter (→  117) and a process variable is selected in the **Assign freq.** parameter (→  123).

Description Use this function to select the failure mode of the frequency output in the event of a device alarm.

* Visibility depends on order options or device settings

Selection	■ Actual value ■ Defined value ■ 0 Hz
Factory setting	0 Hz
Additional information	<i>Selection</i> ■ Actual value In the event of a device alarm, the frequency output continues on the basis of the current flow measurement. The device alarm is ignored. ■ Defined value In the event of a device alarm, the frequency output continues on the basis of a predefined value. The Failure freq. (→ 129) replaces the current measured value, making it possible to bypass the device alarm. The actual measurement is switched off for the duration of the device alarm. ■ 0 Hz In the event of a device alarm, the frequency output is "switched off". NOTICE! A device alarm is a measuring device error that must be taken seriously. It can affect the measurement quality such that the quality can no longer be guaranteed. The Actual value option is only recommended if it can be guaranteed that all possible alarm conditions will not affect the measurement quality.

Failure freq.



Navigation	Expert → Output → PFS output 1 to n → Failure freq. (0474–1 to n)
Prerequisite	The Frequency option is selected in the Operating mode parameter (→ 117) and a process variable is selected in the Assign freq. parameter (→ 123).
Description	Use this function to enter the value for the frequency output in the event of a device alarm in order to bypass the alarm.
User entry	0.0 to 12 500.0 Hz
Factory setting	0.0 Hz

Output freq. 1 to n

Navigation	Expert → Output → PFS output 1 to n → Output freq. 1 to n (0471–1 to n)
Prerequisite	In the Operating mode parameter (→ 117), the Frequency option is selected.
Description	Displays the actual value of the output frequency which is currently measured.
User interface	0.0 to 12 500.0 Hz

Switch out funct 	
Navigation	  Expert → Output → PFS output 1 to n → Switch out funct (0481–1 to n)
Prerequisite	The Switch option is selected in the Operating mode parameter (→  117).
Description	Use this function to select a function for the switch output.
Selection	■ Off ■ On ■ Diag. behavior ■ Limit ■ Fl. direct.check ■ Status
Factory setting	Off
Additional information	<i>Selection</i> ■ Off The switch output is permanently switched off (open, non-conductive). ■ On The switch output is permanently switched on (closed, conductive). ■ Diag. behavior Indicates if the diagnostic event is present or not. Is used to output diagnostic information and to react to it appropriately at the system level. ■ Limit Indicates if a specified limit value has been reached for the process variable. Is used to output diagnostic information relating to the process and to react to it appropriately at the system level. ■ Fl. direct.check Indicates the flow direction (forward or reverse flow). ■ Status Indicates the device status depending on whether empty pipe detection or low flow cut off is selected.
Assign diag. beh 	
Navigation	  Expert → Output → PFS output 1 to n → Assign diag. beh (0482–1 to n)
Prerequisite	■ In the Operating mode parameter (→  117), the Switch option is selected. ■ In the Switch out funct parameter (→  130), the Diag. behavior option is selected.
Description	Use this function to select the diagnostic event category that is displayed for the switch output.
Selection	■ Alarm ■ Alarm or warning ■ Warning
Factory setting	Alarm

Additional information*Description*

If no diagnostic event is pending, the switch output is closed and conductive.

Selection

- **Alarm**
The switch output signals only diagnostic events in the alarm category.
- **Alarm or warning**
The switch output signals diagnostic events in the alarm and warning category.
- **Warning**
The switch output signals only diagnostic events in the warning category.

Assign limit**Navigation**

Expert → Output → PFS output 1 to n → Assign limit (0483–1 to n)

Prerequisite

- The **Switch** option is selected in the **Operating mode** parameter (→ 117) parameter.
- The **Limit** option is selected in the **Switch out funct** parameter (→ 130) parameter.

Description

Use this function to select a process variable for the limit function.

Selection

- Mass flow
- Volume flow
- Correct.vol.flow *
- Target mass flow *
- Carrier mass fl. *
- Target vol. flow *
- Carrier vol. fl. *
- Targ.corr.vol.fl *
- Carr.corr.vol.fl *
- Density
- Ref.density *
- Ref.dens.altern. *
- GSV flow *
- GSVa *
- NSV flow *
- NSVa *
- S&W volume flow *
- Water cut *
- Oil density *
- Water density *
- Oil mass flow *
- Water mass flow *
- Oil volume flow *
- Water vol. flow *
- Oil corr.vol.fl. *
- Water corr.v.fl. *
- Dynam. viscosity *
- Concentration *
- Kinematic visc. *
- TempCompDynVisc *
- TempCompKinVisc *

* Visibility depends on order options or device settings

- Temperature
- Oscil. damping
- Pressure
- Totalizer 1
- Totalizer 2
- Totalizer 3

Factory setting

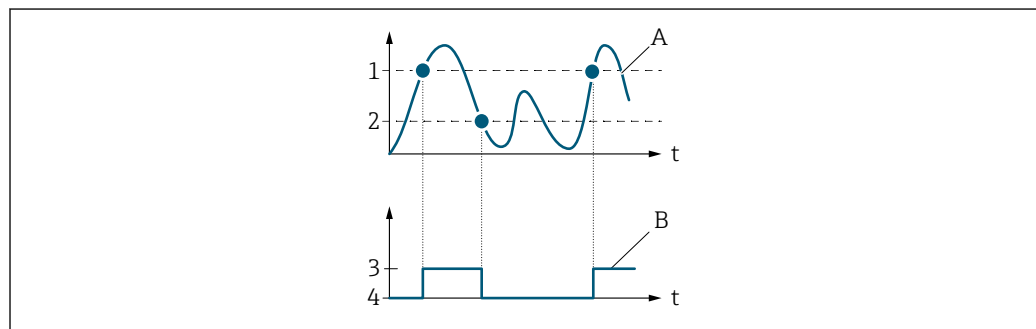
Mass flow

Additional information

Description

Behavior of status output when Switch-on value > Switch-off value:

- Process variable > Switch-on value: transistor is conductive
- Process variable < Switch-off value: transistor is non-conductive

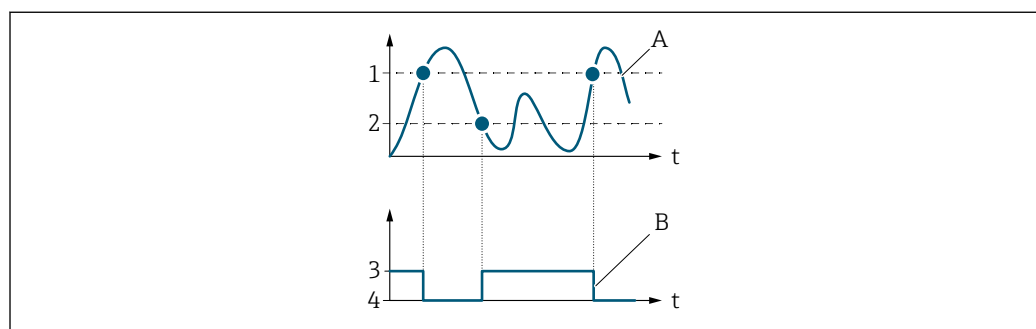


A0026891

- 1 Switch-on value
- 2 Switch-off value
- 3 Conductive
- 4 Non-conductive
- A Process variable
- B Status output

Behavior of status output when Switch-on value < Switch-off value:

- Process variable < Switch-on value: transistor is conductive
- Process variable > Switch-off value: transistor is non-conductive

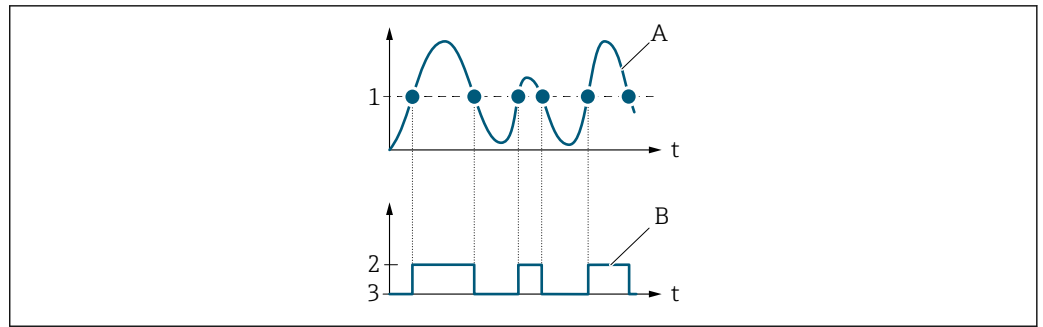


A0026892

- 1 Switch-off value
- 2 Switch-on value
- 3 Conductive
- 4 Non-conductive
- A Process variable
- B Status output

Behavior of status output when Switch-on value = Switch-off value:

- Process variable > Switch-on value: transistor is conductive
- Process variable < Switch-off value: transistor is non-conductive



A0026893

- 1 Switch-on value = Switch-off value
- 2 Conductive
- 3 Non-conductive
- A Process variable
- B Status output

Switch-on value



Navigation	Expert → Output → PFS output 1 to n → Switch-on value (0466-1 to n)
Prerequisite	■ In the Operating mode parameter (→ 117), the Switch option is selected. ■ In the Switch out funct parameter (→ 130), the Limit option is selected.
Description	Use this function to enter the measured value for the switch-on point.
User entry	Signed floating-point number
Factory setting	Country-specific: ■ 0 kg/h ■ 0 lb/min
Additional information	<i>Description</i> Use this function to enter the limit value for the switch-on value (process variable > switch-on value = closed, conductive). When using a hysteresis: Switch-on value > Switch-off value. <i>Dependency</i> The unit depends on the process variable selected in the Assign limit parameter (→ 131).

Switch-off value



Navigation	Expert → Output → PFS output 1 to n → Switch-off value (0464-1 to n)
Prerequisite	■ In the Operating mode parameter (→ 117), the Switch option is selected. ■ In the Switch out funct parameter (→ 130), the Limit option is selected.
Description	Use this function to enter the measured value for the switch-off point.

User entry	Signed floating-point number
Factory setting	Country-specific: ■ 0 kg/h ■ 0 lb/min
Additional information	<i>Description</i> Use this function to enter the limit value for the switch-off value (process variable < switch-off value = open, non-conductive).  When using a hysteresis: Switch-on value > Switch-off value. <i>Dependency</i>  The unit depends on the process variable selected in the Assign limit parameter (→  131).

Assign dir.check

Navigation	  Expert → Output → PFS output 1 to n → Assign dir.check (0484–1 to n)
Prerequisite	■ The Switch option is selected in the Operating mode parameter (→  117). ■ The Fl. direct.check option is selected in the Switch out funct parameter (→  130).
Description	Use this function to select a process variable for monitoring the flow direction.
Selection	■ Off ■ Volume flow ■ Mass flow ■ Correct.vol.flow *
Factory setting	Mass flow

Assign status

Navigation	  Expert → Output → PFS output 1 to n → Assign status (0485–1 to n)
Prerequisite	■ The Switch option is selected in the Operating mode parameter (→  117). ■ The Status option is selected in the Switch out funct parameter (→  130).
Description	Use this function to select a device status for the switch output.
Selection	■ Partial pipe det ■ Low flow cut off ■ Digital outp. 4 *
Factory setting	Partial pipe det

* Visibility depends on order options or device settings

Additional information*Options*

If empty pipe detection or low flow cut off are enabled, the output is conductive. Otherwise, the switch output is non-conductive.

Switch-on delay**Navigation**

Expert → Output → PFS output 1 to n → Switch-on delay (0467–1 to n)

Prerequisite

- The **Switch** option is selected in the **Operating mode** parameter (→ 117).
- The **Limit** option is selected in the **Switch out funct** parameter (→ 130).

Description

Use this function to enter a delay time for switching on the switch output.

User entry

0.0 to 100.0 s

Factory setting

0.0 s

Switch-off delay**Navigation**

Expert → Output → PFS output 1 to n → Switch-off delay (0465–1 to n)

Prerequisite

- The **Switch** option is selected in the **Operating mode** parameter (→ 117).
- The **Limit** option is selected in the **Switch out funct** parameter (→ 130).

Description

Use this function to enter a delay time for switching off the switch output.

User entry

0.0 to 100.0 s

Factory setting

0.0 s

Failure mode**Navigation**

Expert → Output → PFS output 1 to n → Failure mode (0486–1 to n)

Description

Use this function to select a failsafe mode for the switch output in the event of a device alarm.

Selection

- Actual status
- Open
- Closed

Factory setting

Open

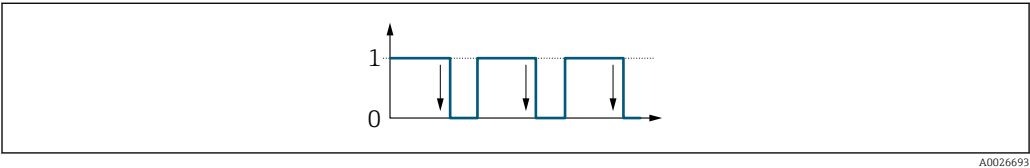
Additional information	Options ■ Actual status In the event of a device alarm, faults are ignored and the current behavior of the input value is output by the switch output. The Actual status option behaves in the same way as the current input value. ■ Open In the event of a device alarm, the switch output's transistor is set to non-conductive. ■ Closed In the event of a device alarm, the switch output's transistor is set to conductive.
------------------------	---

Switch status 1 to n

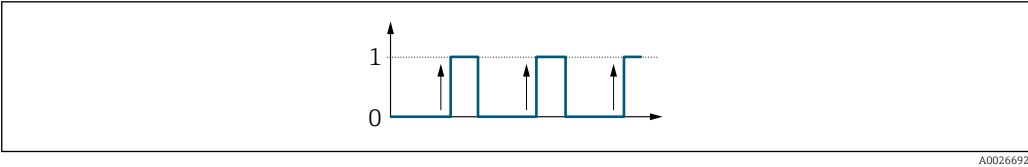
Navigation	Expert → Output → PFS output 1 to n → Switch status 1 to n (0461–1 to n)
Prerequisite	The Switch option is selected in the Operating mode parameter (→ 117).
Description	Displays the current switch status of the status output.
User interface	■ Open ■ Closed
Additional information	User interface ■ Open The switch output is not conductive. ■ Closed The switch output is conductive.

Invert outp.sig.

Navigation	Expert → Output → PFS output 1 to n → Invert outp.sig. (0470–1 to n)
Description	Use this function to select whether to invert the output signal.
Selection	■ No ■ Yes
Factory setting	No
Additional information	Selection No option (passive - negative)



Yes option (passive - positive)



3.5.3 "Relay output 1 to n" submenu

Navigation  Expert → Output → Relay output 1 to n

► Relay output 1 to n		
Terminal no.	→ 	137
Relay outp.func.	→ 	138
Assign dir.check	→ 	138
Assign limit	→ 	139
Assign diag. beh	→ 	140
Assign status	→ 	140
Switch-off value	→ 	141
Switch-off delay	→ 	141
Switch-on value	→ 	141
Switch-on delay	→ 	142
Failure mode	→ 	142
Switch status	→ 	143
Powerless relay	→ 	143

Terminal no.

Navigation  Expert → Output → Relay output 1 to n → Terminal no. (0812–1 to n)

Description Displays the terminal numbers used by the relay output module.

User interface	■ Not used ■ 24-25 (I/O 2)
Additional information	<i>"Not used" option</i> The relay output module does not use any terminal numbers.

Relay outp.func.



Navigation	Expert → Output → Relay output 1 to n → Relay outp.func. (0804-1 to n)
Description	Use this function to select an output function for the relay output.
Selection	■ Closed ■ Open ■ Diag. behavior ■ Limit ■ Fl. direct.check ■ Digital Output
Factory setting	Closed
Additional information	<i>Selection</i> ■ Closed The relay output is permanently switched on (closed, conductive). ■ Open The relay output is permanently switched off (open, non-conductive). ■ Diag. behavior Indicates if the diagnostic event is present or not. Is used to output diagnostic information and to react to it appropriately at the system level. ■ Limit Indicates if a specified limit value has been reached for the process variable. Is used to output diagnostic information relating to the process and to react to it appropriately at the system level. ■ Fl. direct.check Indicates the flow direction (forward or reverse flow). ■ Digital Output Indicates the device status depending on whether empty pipe detection or low flow cut off is selected.

Assign dir.check



Navigation	Expert → Output → Relay output 1 to n → Assign dir.check (0808-1 to n)
Prerequisite	In the Relay outp.func. parameter (→ 138), the Fl. direct.check option is selected.
Description	Use this function to select a process variable for monitoring the flow direction.

- Selection**
- Off
 - Volume flow
 - Mass flow
 - Correct.vol.flow *

Factory setting Mass flow

Assign limit

Navigation   Expert → Output → Relay output 1 to n → Assign limit (0807-1 to n)

Prerequisite The **Limit** option is selected in the **Relay outp.func.** parameter (→  138) parameter.

Description Use this function to select a process variable for the limit value function.

- Selection**
- Mass flow
 - Volume flow
 - Correct.vol.flow *
 - Target mass flow *
 - Carrier mass fl. *
 - Target vol. flow *
 - Carrier vol. fl. *
 - Targ.corr.vol.fl *
 - Carr.corr.vol.fl *
 - Density
 - Ref.density *
 - Ref.dens.altern. *
 - GSV flow *
 - GSVa *
 - NSV flow *
 - NSVa *
 - S&W volume flow *
 - Water cut *
 - Oil density *
 - Water density *
 - Oil mass flow *
 - Water mass flow *
 - Oil volume flow *
 - Water vol. flow *
 - Oil corr.vol.fl. *
 - Water corr.v.fl. *
 - Dynam. viscosity *
 - Concentration *
 - Kinematic visc. *
 - TempCompDynVisc *
 - TempCompKinVisc *
 - Temperature
 - Oscil. damping
 - Pressure
 - Totalizer 1
 - Totalizer 2
 - Totalizer 3

* Visibility depends on order options or device settings

Factory setting Mass flow

Assign diag. beh

Navigation   Expert → Output → Relay output 1 to n → Assign diag. beh (0806–1 to n)

Prerequisite In the **Relay outp.func.** parameter (→  138), the **Diag. behavior** option is selected.

Description Use this function to select the category of the diagnostic events that are displayed for the relay output.

Selection

- Alarm
- Alarm or warning
- Warning

Factory setting Alarm

Additional information *Description*

 If no diagnostic event is pending, the relay output is closed and conductive.

Selection

- Alarm
The relay output signals only diagnostic events in the alarm category.
- Alarm or warning
The relay output signals diagnostic events in the alarm and warning category.
- Warning
The relay output signals only diagnostic events in the warning category.

Assign status

Navigation   Expert → Output → Relay output 1 to n → Assign status (0805–1 to n)

Prerequisite In the **Relay outp.func.** parameter (→  138), the **Digital Output** option is selected.

Description Use this function to select the device status for the relay output.

Selection

- Partial pipe det
- Low flow cut off
- Digital outp. 4^{*}

Factory setting Partial pipe det

* Visibility depends on order options or device settings

Switch-off value

Navigation	  Expert → Output → Relay output 1 to n → Switch-off value (0809–1 to n)
Prerequisite	In the Relay outp.func. parameter (→  138), the Limit option is selected.
Description	Use this function to enter the measured value for the switch-off point.
User entry	Signed floating-point number
Factory setting	Country-specific: ■ 0 kg/h ■ 0 lb/min
Additional information	<i>Description</i> Use this function to enter the limit value for the switch-off value (process variable < switch-off value = open, non-conductive).  When using a hysteresis: Switch-on value > Switch-off value. <i>Dependency</i>  The unit is dependent on the process variable selected in the Assign limit parameter (→  139).

Switch-off delay

Navigation	  Expert → Output → Relay output 1 to n → Switch-off delay (0813–1 to n)
Prerequisite	In the Relay outp.func. parameter (→  138), the Limit option is selected.
Description	Use this function to enter a delay time for switching off the switch output.
User entry	0.0 to 100.0 s
Factory setting	0.0 s

Switch-on value

Navigation	  Expert → Output → Relay output 1 to n → Switch-on value (0810–1 to n)
Prerequisite	In the Relay outp.func. parameter (→  138), the Limit option is selected.
Description	Use this function to enter the measured value for the switch-on point.
User entry	Signed floating-point number

Factory setting

Country-specific:

- 0 kg/h
- 0 lb/min

Additional information

Description

Use this function to enter the limit value for the switch-on value (process variable > switch-on value = closed, conductive).



When using a hysteresis: Switch-on value > Switch-off value.

Dependency



The unit is dependent on the process variable selected in the **Assign limit** parameter (→ 139).

Switch-on delay

Navigation Expert → Output → Relay output 1 to n → Switch-on delay (0814–1 to n)

Prerequisite In the **Relay outp.func.** parameter (→ 138), the **Limit** option is selected.

Description Use this function to enter a delay time for switching on the switch output.

User entry 0.0 to 100.0 s

Factory setting 0.0 s

Failure mode

Navigation Expert → Output → Relay output 1 to n → Failure mode (0811–1 to n)

Description Use this function to select the failure mode of the relay output in the event of a device alarm.

Selection

- Actual status
- Open
- Closed

Factory setting Open

Additional information

Selection

- Actual status
In the event of a device alarm, faults are ignored and the current behavior of the input value is output by the relay output. The **Actual status** option behaves in the same way as the current input value.
- Open
In the event of a device alarm, the relay output's transistor is set to **non-conductive**.
- Closed
In the event of a device alarm, the relay output's transistor is set to **conductive**.

Switch status	
Navigation	  Expert → Output → Relay output 1 to n → Switch status (0801–1 to n)
Description	Displays the current status of the relay output.
User interface	■ Open ■ Closed
Additional information	<i>User interface</i> ■ Open The relay output is not conductive. ■ Closed The relay output is conductive.
Powerless relay 	

Navigation	  Expert → Output → Relay output 1 to n → Powerless relay (0816–1 to n)
Description	Use this function to select the quiescent state for the relay output.
Selection	■ Open ■ Closed
Factory setting	Open
Additional information	<i>Selection</i> ■ Open The relay output is not conductive. ■ Closed The relay output is conductive.

3.6 "Communication" submenu

Navigation   Expert → Communication

► Communication	
► PROFIBUS PA conf	→  144
► PROFIBUS PA info	→  145
► Physical block	→  147

► Web server	→ 156
► WLAN settings	→ 160

3.6.1 "PROFIBUS PA conf" submenu

Navigation Expert → Communication → PROFIBUS PA conf

► PROFIBUS PA conf	
Address mode (1468)	→ 144
Device address (1462)	→ 144
Ident num select (1461)	→ 145

Address mode

Navigation	Expert → Communication → PROFIBUS PA conf → Address mode (1468)
Description	Displays the configured address mode.
User interface	■ Hardware ■ Software
Factory setting	Software
Additional information	Description For detailed information, see the "Setting the device address" section of the Operating Instructions.

Device address

Navigation	Expert → Communication → PROFIBUS PA conf → Device address (1462)
Description	Use this function to enter the device address.
User entry	0 to 126
Factory setting	126
Additional information	Description The address must always be configured for a PROFIBUS device. The valid address range is between 1 and 126. In a PROFIBUS network, each address can only be assigned once. If an address is not configured correctly, the device is not recognized by the master. All

measuring devices are delivered from the factory with the device address 126 and with the software addressing method.

 Displays the configured address mode: **Address mode** parameter (→  144)

Ident num select	
Navigation	  Expert → Communication → PROFIBUS PA conf → Ident num select (1461)
Description	Use this function to select the device master file (GSD).
Selection	■ Automatic mode ■ Manufacturer ■ Profile ■ 1AI,1Tot(0x9740) ■ 2AI,1Tot(0x9741) ■ Promass 80 ■ Promass 83
Factory setting	Automatic mode
Additional information	<i>Description</i> In order to integrate the field devices into the bus system, the PROFIBUS system needs a description of the device parameters, such as output data, input data, data format, data volume and supported transmission rate. These data are available in the device master file (GSD) which is provided to the PROFIBUS Master when the communication system is commissioned.

3.6.2 "PROFIBUS PA info" submenu

Navigation   Expert → Communication → PROFIBUS PA info

► PROFIBUS PA info

Stat Master Conf (1465)

→  146

Ident number (1464)

→  146

Profile version (1463)

→  146

Baudrate (1504)

→  146

Master avail. (1517)

→  147

Stat Master Conf

Navigation	  Expert → Communication → PROFIBUS PA info → Stat Master Conf (1465)
Description	For displaying the status of the PROFIBUS Master configuration.
User interface	■ Active ■ Not active
Factory setting	Not active

Ident number

Navigation	  Expert → Communication → PROFIBUS PA info → Ident number (1464)
Description	For displaying the PROFIBUS identification number.
User interface	0 to FFFF
Factory setting	0x156D

Profile version

Navigation	  Expert → Communication → PROFIBUS PA info → Profile version (1463)
Description	Displays the profile version.
User interface	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).
Factory setting	3.02

Baudrate

Navigation	  Expert → Communication → PROFIBUS PA info → Baudrate (1504)
Description	Displays the transmission rate.
User interface	■ Not available ■ 31.25 kBaud
Factory setting	31.25 kBaud

Master avail.	
Navigation	 Expert → Communication → PROFIBUS PA info → Master avail. (1517)
Description	Displays whether or not a PROFIBUS master is present in the network.
User interface	■ No ■ Yes
Factory setting	No

3.6.3 "Physical block" submenu

Navigation  Expert → Communication → Physical block

► Physical block

Device tag (1496)

Static revision (1495)

Strategy (1494)

Alert key (1473)

Target mode (1497)

Mode block act (1472)

Mode block perm (1493)

Mode blk norm (1492)

Alarm summary (1474)

Software rev. (1478)

Hardware rev. (1479)

Manufacturer ID (1502)

Device ID (1480)

Serial number (1481)

Diagnostics (1482)

→  148

→  148

→  149

→  149

→  149

→  149

→  150

→  150

→  150

→  151

→  151

→  151

→  152

→  152

→  152

Diagnostics mask (1484)	→ ⓘ 153
Device certific. (1486)	→ ⓘ 153
Factory reset (1488)	→ ⓘ 154
Descriptor (1489)	→ ⓘ 154
Device message (1490)	→ ⓘ 154
Device inst.date (1491)	→ ⓘ 154
Ident num select (1461)	→ ⓘ 155
Hardware lock (1499)	→ ⓘ 155
Feature support (1477)	→ ⓘ 156
Feature enabled (1476)	→ ⓘ 156
Condensed status (1500)	→ ⓘ 156

Device tag

ⓘ

Navigation	📄📄 Expert → Communication → Physical block → Device tag (1496)
Description	Use this function to enter the name for the measuring point.
User entry	Max. 32 characters, such as letters, numbers or special characters (e.g. @, %, /).
Factory setting	Promass 500 PA

Static revision

Navigation	📄📄 Expert → Communication → Physical block → Static revision (1495)
Description	Displays the event counter: every write access to a static block parameter is counted.
User interface	0 to FFFF
Additional information	<i>Description</i>  Static parameters are parameters that are not changed by the process.

Strategy 	
Navigation	  Expert → Communication → Physical block → Strategy (1494)
Description	Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.
User entry	0 to FFFF
Factory setting	0
Alert key 	
Navigation	  Expert → Communication → Physical block → Alert key (1473)
Description	Use this function to enter the alert key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.
User entry	0 to 0xFF
Factory setting	0
Target mode 	
Navigation	  Expert → Communication → Physical block → Target mode (1497)
Description	Displays the Target mode: The target mode indicates which mode of operation is used for this function block. This mode is generally set by a control application.
User interface	■ Auto ■ Out of service
Mode block act	
Navigation	  Expert → Communication → Physical block → Mode block act (1472)
Description	Displays the Mode block act: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block act shows the actual mode in which the function block is currently operating. A comparison of the Mode block act with the Target mode indicates whether it was possible to reach the Target mode (→  149).
User interface	■ Auto ■ Out of service

Additional information*Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 149)) indicates whether it was possible to reach the target mode.

Mode block perm

Navigation

Expert → Communication → Physical block → Mode block perm (1493)

Description

Displays the Mode block perm: This defines which modes of operation in the Target mode (→ 149) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface

0 to 255

Mode blk norm

Navigation

Expert → Communication → Physical block → Mode blk norm (1492)

Description

Displays the Mode blk norm: This is available to allow the operator to select the Mode blk norm from the available modes of operation. This can be set using an operating tool in order to help the user configure the operating mode of a function block.

User interface

- Auto
- Out of service

Alarm summary

Navigation

Expert → Communication → Physical block → Alarm summary (1474)

Description

Displays the alarm summary: the current status of the block alarms is displayed. A summary of up to 16 statuses can be displayed.

User interface

- Discrete alarm
- Alm statHiHi lim
- Alm stat Hi lim
- Alm statLoLo lim
- Alm stat Lo lim
- Update Event

Additional information*Description*

Currently, the system only displays a change in a static parameter for 10 seconds, and violations of the early warning and alarm limits in the Physical Block function block.

User interface

- Discrete alarm
Alarm or warning message with a discrete value.
- Alm statHiHi lim
Upper alarm limit
- Alrm stat Hi lim
Upper warning limit
- Alm statLoLo lim
Lower alarm limit
- Alrm stat Lo lim
Lower warning limit
- Update Event

This option constitutes a special alarm that is triggered if a static parameter is changed. If such a parameter is modified, the associated bit is set in the **Alarm summary** parameter (→ 150), the output of the block switches to "GOOD (NC) Active Update Event" (if the current status has a lower priority than this), and the block remains in this state for a duration of 10 s. The block then reverts to the normal state (the output has the last status and the **Update Event** option bit in the **Alarm summary** parameter (→ 150) is deleted again).

Software rev.

Navigation

Expert → Communication → Physical block → Software rev. (1478)

Description

Displays the firmware version of the measuring device.

User interface

Max. 16 characters such as letters, numbers or special characters (e.g. @, %, /).

Hardware rev.

Navigation

Expert → Communication → Physical block → Hardware rev. (1479)

Description

Displays the hardware revision of the measuring device.

User interface

Max. 16 characters such as letters, numbers or special characters (e.g. @, %, /).

Manufacturer ID

Navigation

Expert → Communication → Physical block → Manufacturer ID (1502)

Description

Displays the manufacturer ID with which the measuring device has been registered with the PNO (PROFIBUS User Organization).

User interface 0 to FFFF

Factory setting 0x11

Device ID

Navigation  Expert → Communication → Physical block → Device ID (1480)

Description Displays the device ID for identifying the measuring device in a PROFIBUS network.

User interface Max. 16 characters such as letters, numbers or special characters (e.g. @, %, /).

Factory setting Promass300/500PA

Serial number

Navigation  Expert → Communication → Physical block → Serial number (1481)

Description Displays the serial number of the measuring device. It can also be found on the nameplate of the sensor and transmitter.

User interface Max. 11-digit character string comprising letters and numbers.

Additional information *Description*



Uses of the serial number

- To identify the measuring device quickly, e.g. when contacting Endress+Hauser.
- To obtain specific information on the measuring device using the Device Viewer: www.endress.com/deviceviewer

Diagnostics

Navigation  Expert → Communication → Physical block → Diagnostics (1482)

Description Displays the diagnostic messages.

User interface

- HW Error
- HW Error
- Temp motor
- Electronic temp
- Checksum error
- Measurement error
- Not initialized
- Init. error
- Zero point error
- Power supply
- Conf invalid
- On warmstart

- On coldstart
- Maintenance req.
- Char.invalid
- Ident num Error
- More info avlble
- Mainten. alarm
- Mainten.demanded
- Fct.chk or sim.
- Inval.proc.cond.

Diagnostics mask

Navigation  Expert → Communication → Physical block → Diagnostics mask (1484)

Description Displays the diagnostic messages supported by the measuring device.

User interface

- HW Error
- HW Error
- Temp motor
- Electronic temp
- Checksum error
- Measuremnt error
- Not initialized
- Init. error
- Zero point error
- Power supply
- Conf invalid
- On warmstart
- On coldstart
- Maintenance req.
- Char.invalid
- Ident num Error
- More info avlble
- Mainten. alarm
- Mainten.demanded
- Fct.chk or sim.
- Inval.proc.cond.

Device certific.

Navigation  Expert → Communication → Physical block → Device certific. (1486)

Description Displays certificates of the measuring device, e.g. Ex certificate.

User interface Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Factory reset		
Navigation	Expert → Communication → Physical block → Factory reset (1488)	
Description	Use this function to reset a certain set of parameters in a block.	
Selection	■ to defaults * ■ warmstart device ■ reset bus addr ■ Cancel	
Factory setting	Cancel	
Descriptor		
Navigation	Expert → Communication → Physical block → Descriptor (1489)	
Description	Use this function to enter a user-specific string to describe the device within the application.	
User entry	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).	
Device message		
Navigation	Expert → Communication → Physical block → Device message (1490)	
Description	Use this function to enter a user-definable message (a string) to describe the device within the application or in the plant.	
User entry	Max. 32 Zeichen wie Buchstaben, Zahlen oder Sonderzeichen (z.B. @, %, /).	
Device inst.date		
Navigation	Expert → Communication → Physical block → Device inst.date (1491)	
Description	Use this function to enter the date of installation of the device.	
User entry	Max. 16 Zeichen wie Buchstaben, Zahlen oder Sonderzeichen (z.B. @, %, /).	

* Visibility depends on order options or device settings

Ident num select 	
Navigation	 Expert → Communication → Physical block → Ident num select (1461)
Description	Use this function to select the device master file (GSD).
Selection	■ Automatic mode ■ Manufacturer ■ Profile ■ 1AI,1Tot(0x9740) ■ 2AI,1Tot(0x9741) ■ Promass 80 ■ Promass 83
Factory setting	Automatic mode
Additional information	<i>Description</i> In order to integrate the field devices into the bus system, the PROFIBUS system needs a description of the device parameters, such as output data, input data, data format, data volume and supported transmission rate. These data are available in the device master file (GSD) which is provided to the PROFIBUS Master when the communication system is commissioned.
Hardware lock	
Navigation	 Expert → Communication → Physical block → Hardware lock (1499)
Description	Displays the hardware write protection.
User interface	■ Unprotected ■ Protected
Additional information	<i>Description</i> Indicates whether it is possible to write-access the measuring device via PROFIBUS (acyclic data transmission, e.g. via the "FieldCare" operating program).  For detailed information on hardware write protection, see the "Write protection via write protection switch" section of the Operating Instructions. <i>User interface</i> ■ Unprotected Write access via PROFIBUS is possible (acyclic data transmission). ■ Protected Write access via PROFIBUS is locked (acyclic data transmission).

Feature support

Navigation	 Expert → Communication → Physical block → Feature support (1477)
Description	Displays the PROFIBUS features that are supported by the measuring device.
User interface	■ Condensed status ■ Classic diag ■ Data ex.broad. ■ MS1 app.relation ■ PROFIsafe comm.

Feature enabled

Navigation	 Expert → Communication → Physical block → Feature enabled (1476)
Description	Displays the PROFIBUS features that are enabled in the measuring device.
User interface	■ Condensed status ■ Classic diag ■ Data ex.broad. ■ MS1 app.relation ■ PROFIsafe comm.

Condensed status

Navigation	 Expert → Communication → Physical block → Condensed status (1500)
Description	Use this function to switch the condensed status diagnostic on and off.
Selection	■ Off ■ On
Factory setting	On

3.6.4 "Web server" submenu

Navigation  Expert → Communication → Web server

► Web server

Webserv.language (7221)

→  157

MAC Address (7214)	→ 157
DHCP client (7212)	→ 158
IP address (7209)	→ 158
Subnet mask (7211)	→ 158
Default gateway (7210)	→ 159
Webserver funct. (7222)	→ 159
Login page (7273)	→ 159

Webserv.language

Navigation  Expert → Communication → Web server → Webserv.language (7221)

Description Use this function to select the Web server language setting.

Selection

- English
- Deutsch
- Français
- Español
- Italiano
- Nederlands
- Portuguesa
- Polski
- русский язык(Ru)
- Svenska
- Türkçe
- 中文 (Chinese)
- 日本語 (Japanese)
- 한국어 (Korean)
- Bahasa Indonesia
- tiếng Việt (Vit)
- čeština (Czech)

Factory setting English

MAC Address

Navigation  Expert → Communication → Web server → MAC Address (7214)

Description Displays the MAC ⁸⁾ address of the measuring device.

8) Media Access Control

User interface Unique 12-digit character string comprising letters and numbers

Factory setting Each measuring device is given an individual address.

Additional information *Example*
For the display format
00:07:05:10:01:5F

DHCP client



Navigation   Expert → Communication → Web server → DHCP client (7212)

Description Use this function to activate and deactivate the DHCP client functionality.

Selection

- Off
- On

Factory setting Off

Additional information *Result*
If the DHCP client functionality of the Web server is activated, the IP address (→  158), Subnet mask (→  158) and Default gateway (→  159) are set automatically.
 Identification is via the MAC address of the measuring device.

IP address



Navigation   Expert → Communication → Web server → IP address (7209)

Description Display or enter the IP address of the Web server integrated in the measuring device.

User entry 4 octet: 0 to 255 (in the particular octet)

Factory setting 192.168.1.212

Additional information

Subnet mask



Navigation   Expert → Communication → Web server → Subnet mask (7211)

Description Display or enter the subnet mask.

User entry 4 octet: 0 to 255 (in the particular octet)

Factory setting 255.255.255.0

Default gateway

Navigation   Expert → Communication → Web server → Default gateway (7210)

Description Display or enter the Default gateway (→  159).

User entry 4 octet: 0 to 255 (in the particular octet)

Factory setting 0.0.0.0

Webserver funct.

Navigation   Expert → Communication → Web server → Webserver funct. (7222)

Description Use this function to switch the Web server on and off.

Selection

- Off
- HTML Off
- On

Factory setting On

Additional information *Description*

 Once disabled, the Webserver funct. can only be re-enabled via or the operating tool FieldCare.

Selection

Option	Description
Off	■ The web server is completely disabled. ■ Port 80 is locked.
HTML Off	The HTML version of the web server is not available.
On	■ The complete functionality of the web server is available. ■ JavaScript is used. ■ The password is transferred in an encrypted state. ■ Any change to the password is also transferred in an encrypted state.

Login page

Navigation   Expert → Communication → Web server → Login page (7273)

Description Use this function to select the format of the login page.

Selection ■ Without header
 ■ With header

Factory setting With header

3.6.5 "WLAN settings" submenu

Navigation  Expert → Communication → WLAN settings

► WLAN settings		
WLAN (2702)	→ 	161
WLAN mode (2717)	→ 	161
SSID name (2714)	→ 	161
Network security (2705)	→ 	162
Sec. identific. (2718)	→ 	162
User name (2715)	→ 	162
WLAN password (2716)	→ 	163
WLAN IP address (2711)	→ 	163
WLAN MAC address (2703)	→ 	163
WLAN subnet mask (2709)	→ 	163
WLAN MAC address (2703)	→ 	163
WLAN passphrase (2706)	→ 	164
Assign SSID name (2708)	→ 	164
SSID name (2707)	→ 	164
WLAN channel (2704)	→ 	165
Select antenna (2713)	→ 	165
Connection state (2722)	→ 	165
Rec.sig.strength (2721)	→ 	166

WLAN IP address (2711)	→ 163
Gateway IP addr. (2719)	→ 166
IP address DNS (2720)	→ 166

WLAN

Navigation	 Expert → Communication → WLAN settings → WLAN (2702)
Description	Use this function to enable and disable the WLAN connection.
Selection	■ Disable ■ Enable
Factory setting	Enable

WLAN mode

Navigation	 Expert → Communication → WLAN settings → WLAN mode (2717)
Description	Use this function to select the WLAN mode.
Selection	■ Access point ■ WLAN Client
Factory setting	Access point

SSID name

Navigation	 Expert → Communication → WLAN settings → SSID name (2714)
Prerequisite	The client is activated.
Description	Use this function to enter the user-defined SSID name (max. 32 characters) of the WLAN network.
User entry	–
Factory setting	–

Network security



Navigation  Expert → Communication → WLAN settings → Network security (2705)

Description Use this function to select the type of security for the WLAN interface.

Selection

- Unsecured
- WPA2-PSK
- EAP-PEAP MSCHAP2 *
- EAP-PEAP NoAuth. *
- EAP-TLS *

Factory setting WPA2-PSK

Additional information *Selection*

- Unsecured
Access the WLAN connection without identification.
- WPA2-PSK
Access the WLAN connection with a network key.

Sec. identific.

Navigation  Expert → Communication → WLAN settings → Sec. identific. (2718)

Description Use this function to select the security settings (download via the menu: Data Management > Security > Download WLAN).

User interface

- Trust. iss.cert.
- Device certific.
- Dev. private key

User name



Navigation  Expert → Communication → WLAN settings → User name (2715)

Description Use this function to enter the username of the WLAN network.

User entry –

Factory setting –

* Visibility depends on order options or device settings

WLAN password



Navigation Expert → Communication → WLAN settings → WLAN password (2716)

Description Use this function to enter the WLAN password for the WLAN network.

User entry –

Factory setting –

WLAN IP address



Navigation Expert → Communication → WLAN settings → WLAN IP address (2711)

Description Use this function to enter the IP address of the measuring device's WLAN connection.

User entry 4 octet: 0 to 255 (in the particular octet)

Factory setting 192.168.1.212

WLAN MAC address

Navigation Expert → Communication → WLAN settings → WLAN MAC address (2703)

Description Displays the MAC ⁹⁾ address of the measuring device.

User interface Unique 12-digit character string comprising letters and numbers

Factory setting Each measuring device is given an individual address.

Additional information *Example*
For the display format
00:07:05:10:01:5F

WLAN subnet mask



Navigation Expert → Communication → WLAN settings → WLAN subnet mask (2709)

Description Use this function to enter the subnet mask.

User entry 4 octet: 0 to 255 (in the particular octet)

9) Media Access Control

Factory setting 255.255.255.0

WLAN passphrase



Navigation  Expert → Communication → WLAN settings → WLAN passphrase (2706)

Prerequisite The **WPA2-PSK** option is selected in the **Security type** parameter (→  162).

Description Use this function to enter the network key.

User entry 8 to 32-digit character string comprising numbers, letters and special characters

Factory setting Serial number of the measuring device (e.g. L100A802000)

Assign SSID name



Navigation  Expert → Communication → WLAN settings → Assign SSID name (2708)

Description Use this function to select which name is used for the SSID ¹⁰⁾.

Selection

- Device tag
- User-defined

Factory setting User-defined

Additional information *Selection*

- Device tag
The device tag name is used as the SSID.
- User-defined
A user-defined name is used as the SSID.

SSID name



Navigation  Expert → Communication → WLAN settings → SSID name (2707)

Prerequisite

- The **User-defined** option is selected in the **Assign SSID name** parameter (→  164) parameter.
- The **Access point** option is selected in the **WLAN mode** parameter (→  161) parameter.

Description Use this function to enter a user-defined SSID name.

User entry Max. 32-digit character string comprising numbers, letters and special characters

¹⁰⁾ Service Set Identifier

Factory setting EH_device designation_last 7 digits of the serial number (e.g. EH_Promass_500_A802000)

WLAN channel

Navigation   Expert → Communication → WLAN settings → WLAN channel (2704)

Description Use this function to enter the WLAN channel.

User entry 1 to 11

Factory setting 6

Additional information *Description*



- It is only necessary to enter a WLAN channel if multiple WLAN devices are in use.
- If just one measuring device is in use, it is recommended to keep the factory setting.

Select antenna

Navigation   Expert → Communication → WLAN settings → Select antenna (2713)

Description Use this function to select whether the external or internal antenna is used for reception.

Selection

- External antenna
- Internal antenna

Factory setting Internal antenna

Connection state

Navigation  Expert → Communication → WLAN settings → Connection state (2722)

Description The connection status is displayed.

User interface

- Connected
- Not connected

Factory setting Not connected

Rec.sig.strength

Navigation	 Expert → Communication → WLAN settings → Rec.sig.strength (2721)
Description	Displays the signal strength received.
User interface	■ Low ■ Medium ■ High
Factory setting	High

Gateway IP addr.

Navigation	 Expert → Communication → WLAN settings → Gateway IP addr. (2719)
Description	Use this function to enter the IP address of the gateway.
Factory setting	192.168.1.212

IP address DNS

Navigation	 Expert → Communication → WLAN settings → IP address DNS (2720)  Expert → Communication → WLAN settings → IP address DNS (2720)
Description	Use this function to enter the IP address of the domain name server.
Factory setting	192.168.1.212

3.7 "Analog inputs" submenu

Navigation  Expert → Analog inputs

▶ Analog inputs

▶ Analog input 1 to n

→  167

3.7.1 "Analog input 1 to n" submenu

Navigation  Expert → Analog inputs → Analog input 1 to n

► Analog input 1 to n		
Channel (1561-1 to n)	→ 	167
PV filter time (1524-1 to n)	→ 	168
Fail safe type (1525-1 to n)	→ 	168
Fail-safe value (1526-1 to n)	→ 	169
Out value (1552-1 to n)	→ 	169
Out status (1564-1 to n)	→ 	169
Out status (1549-1 to n)	→ 	170

Channel	
---------	---

Navigation  Expert → Analog inputs → Analog input 1 to n → Channel (1561-1 to n)

Description For selecting the process variable.

- Selection
- Mass flow
 - Volume flow
 - Correct.vol.flow *
 - Density
 - Ref.density *
 - Target mass flow *
 - Carrier mass fl. *
 - Concentration *
 - Target vol. flow *
 - Carrier vol. fl. *
 - Targ.corr.vol.fl *
 - Carr.corr.vol.fl *
 - Dynam. viscosity *
 - Kinematic visc. *
 - TempCompDynVisc *
 - TempCompKinVisc *
 - Temperature
 - Carr. pipe temp. *
 - Electronic temp.
 - Osc. freq. 0
 - Osc. freq. 1 *
 - Osc. ampl. 0 *
 - Osc. ampl. 1 *

* Visibility depends on order options or device settings

- Freq. fluct. 0 *
- Freq. fluct. 1 *
- Osc. damping 0 *
- Osc. damping 1 *
- Osc.damp.fluct 0 *
- Osc.damp.fluct 1 *
- Signal asymmetry *
- Exc. current 0 *
- Exc. current 1 *
- HBSI *
- Current input 1 *
- Ref.dens.altern. *
- GSV flow *
- GSVa *
- NSV flow *
- NSVa *
- S&W volume flow *
- Oil density *
- Water density *
- Water cut *
- Oil mass flow *
- Water mass flow *
- Oil volume flow *
- Water vol. flow *
- Oil corr.vol.fl. *
- Water corr.v.fl. *

Factory setting Mass flow

PV filter time

Navigation   Expert → Analog inputs → Analog input 1 to n → PV filter time (1524-1 to n)

Description Use this function to enter a time to suppress signal peaks. During the specified time the Analog input does not respond to an erratic increase in the process variable.

User entry Positive floating-point number

Factory setting 0

Fail safe type

Navigation   Expert → Analog inputs → Analog input 1 to n → Fail safe type (1525-1 to n)

Description Use this function to select the failure mode.

* Visibility depends on order options or device settings

Selection	■ Fail-safe value ■ Fallback value ■ Off
Factory setting	Off
Additional information	<i>Selection</i> If an input or simulation value has the status BAD, the function block uses this predefined failure value: ■ Fail-safe value A substitute value is used. This is specified in the Fail-safe value parameter (→  169). ■ Fallback value If the value was good at one point, then this last valid value is used. ■ Off The system continues to use the bad value.

Fail-safe value

Navigation	  Expert → Analog inputs → Analog input 1 to n → Fail-safe value (1526–1 to n)
Prerequisite	In Fail safe type parameter (→  168), the Fail-safe value option is selected.
Description	Use this function to enter a failure value. The value entered is displayed as the output value (Out value parameter (→  169)) in the event of an error.
User entry	Signed floating-point number
Factory setting	0

Out value

Navigation	  Expert → Analog inputs → Analog input 1 to n → Out value (1552–1 to n)
Prerequisite	In Target mode parameter (→  171), the Auto option is selected.
Description	Displays the analog value which is calculated when the function is executed.
User interface	Signed floating-point number

Out status

Navigation	  Expert → Analog inputs → Analog input 1 to n → Out status (1564–1 to n)
Description	Displays the current output status (Good, Bad, Uncertain).

User interface	■ Good ■ Uncertain ■ Bad
-----------------------	--

Out status

Navigation	 Expert → Analog inputs → Analog input 1 to n → Out status (1549–1 to n)
Prerequisite	In Target mode parameter (→  171), the Auto option is selected.
Description	Displays the current output status (hex value).
User interface	0 to 0xFF

Tag description



Navigation	 Expert → Analog inputs → Analog input 1 to n → Tag description (1562–1 to n)
Description	Use this function to enter a string to identify the block.
User entry	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Static revision

Navigation	 Expert → Analog inputs → Analog input 1 to n → Static revision (1560–1 to n)
Description	Displays the event counter: every write access to a static block parameter is counted.
User interface	0 to FFFF
Additional information	<i>Description</i>  Static parameters are parameters that are not changed by the process.

Strategy



Navigation	 Expert → Analog inputs → Analog input 1 to n → Strategy (1559–1 to n)
Description	Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.
User entry	0 to FFFF

Factory setting 0

Alert key

Navigation  Expert → Analog inputs → Analog input 1 to n → Alert key (1522-1 to n)

Description Use this function to enter the alert key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.

User entry 0 to 0xFF

Factory setting 0

Target mode

Navigation  Expert → Analog inputs → Analog input 1 to n → Target mode (1563-1 to n)

Description Displays the Target mode: The target mode indicates which mode of operation is used for this function block. This mode is generally set by a control application.

User interface

- Auto
- Man
- Out of service

Mode block act

Navigation  Expert → Analog inputs → Analog input 1 to n → Mode block act (1521-1 to n)

Description Displays the Mode block act: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block act shows the actual mode in which the function block is currently operating. A comparison of the Mode block act with the Target mode indicates whether it was possible to reach the Target mode (→  171).

User interface

- Auto
- Man
- Out of service

Additional information *Description*



A comparison of the current mode with the target mode (**Target mode** parameter (→  171)) indicates whether it was possible to reach the target mode.

Mode block perm

Navigation	 Expert → Analog inputs → Analog input 1 to n → Mode block perm (1553–1 to n)
Description	Displays the Mode block perm: This defines which modes of operation in the Target mode (→  171) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.
User interface	0 to 255

Mode blk norm

Navigation	 Expert → Analog inputs → Analog input 1 to n → Mode blk norm (1546–1 to n)
Description	Displays the Mode blk norm: This is available to allow the operator to select the Mode blk norm from the available modes of operation. This can be set using an operating tool in order to help the user configure the operating mode of a function block.
User interface	■ Auto ■ Man ■ Out of service

Alarm summary

Navigation	 Expert → Analog inputs → Analog input 1 to n → Alarm summary (1537–1 to n)
Description	Displays the alarm summary: the current status of the block alarms is displayed. A summary of up to 16 statuses can be displayed.
User interface	■ Discrete alarm ■ Alm statHiHi lim ■ Alm stat Hi lim ■ Alm statLoLo lim ■ Alm stat Lo lim ■ Update Event
Additional information	<i>Description</i>  Currently, the system only displays a change in a static parameter for 10 seconds, and violations of the early warning and alarm limits in the Analog Inputs function block.

Batch ID 	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Batch ID (1533–1 to n)
Description	Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.
User entry	Positive integer
Batch operation 	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Batch operation (1534–1 to n)
Description	Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.
User entry	0 to 65 535
Factory setting	0
Batch phase 	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Batch phase (1535–1 to n)
Description	Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.
User entry	0 to 65 535
Factory setting	0
Batch Recipe 	
Navigation	 Expert → Analog inputs → Analog input 1 to n → Batch Recipe (1536–1 to n)
Description	Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).
User entry	0 to 65 535
Factory setting	0

Additional information*Description*

The unit is defined in IEC61512 Part1/ISA S88 but its meaning is different to that of the parameter unit, such as system units.

PVscale lo range**Navigation**

Expert → Analog inputs → Analog input 1 to n → PVscale lo range (1554–1 to n)

Description

Use this function to enter the lower value range for the input value (Process Value Scale) in system units. The process value scale normalizes the input value to a user-specific range.

User entry

Signed floating-point number

Factory setting

0

PVscale up range**Navigation**

Expert → Analog inputs → Analog input 1 to n → PVscale up range (1555–1 to n)

Description

Use this function to enter the upper value range for the input value (Process Value Scale) in system units. The process value scale normalizes the input value to a user-specific range.

User entry

Signed floating-point number

Factory setting

100.0

Out scale low**Navigation**

Expert → Analog inputs → Analog input 1 to n → Out scale low (1548–1 to n)

Description

Use this function to enter the lower value range for the output value in system units.

User entry

Signed floating-point number

Factory setting

0

Out scale up**Navigation**

Expert → Analog inputs → Analog input 1 to n → Out scale up (1551–1 to n)

Description

Use this function to enter the upper value range for the output value in system units.

User entry Signed floating-point number

Factory setting 100.0

Lin type

Navigation  Expert → Analog inputs → Analog input 1 to n → Lin type (1523-1 to n)

Description Use this function to switch off the linearization type for the input value.

Selection Off

Factory setting Off

Out unit

Navigation  Expert → Analog inputs → Analog input 1 to n → Out unit (1550-1 to n)

Description Use this function to enter a numerical code (hex) for the system unit.

User entry 0 to 65 535

Factory setting 1997

Out dec_ point

Navigation  Expert → Analog inputs → Analog input 1 to n → Out dec_ point (1547-1 to n)

Description Use this function to enter the maximum number of decimal places that are displayed for the output value.

User entry 0 to 7

Factory setting 0

Alarm hysteresis

Navigation  Expert → Analog inputs → Analog input 1 to n → Alarm hysteresis (1527-1 to n)

Description Use this function to enter the hysteresis value for the upper and lower warning or alarm limit values.

User entry Signed floating-point number

Factory setting 0

Hi Hi Lim

Navigation  Expert → Analog inputs → Analog input 1 to n → Hi Hi Lim (1528–1 to n)

Description Use this function to enter the value for the upper alarm limit (**HiHi alarm value** parameter (→  177)).

User entry Signed floating-point number

Factory setting Positive floating-point number

Additional information *Description*

 If the output value Out value (→  169) exceeds this limit value, the **HiHi alarm state** parameter (→  178) is output.

User entry

 The value is entered in the defined units (**Out unit** parameter (→  175)) and must be in the range defined in the **Out scale low** parameter (→  174) and **Out scale up** parameter (→  174).

Hi Lim

Navigation  Expert → Analog inputs → Analog input 1 to n → Hi Lim (1529–1 to n)

Description Use this function to enter the value for the upper warning limit (**Hi alarm value** parameter (→  178)).

User entry Signed floating-point number

Factory setting Positive floating-point number

Additional information *Description*

 If the output value Out value (→  169) exceeds this limit value, the **Hi alarm state** parameter (→  178) is output.

User entry

 The value is entered in the defined units (**Out unit** parameter (→  175)) and must be in the range defined in the **Out scale low** parameter (→  174) and **Out scale up** parameter (→  174).

Lo Lim



Navigation	 Expert → Analog inputs → Analog input 1 to n → Lo Lim (1530-1 to n)
Description	Use this function to enter the value for the lower warning limit (Lo alarm value parameter (→  178)).
User entry	Signed floating-point number
Factory setting	Negative floating-point number
Additional information	<i>Description</i>  If the output value Out value (→  169) exceeds this limit value, the Lo alarm state parameter (→  179) is output. <i>User entry</i>  The value is entered in the defined units (Out unit parameter (→  175)) and must be in the range defined in the Out scale low parameter (→  174) and Out scale up parameter (→  174).

Lo Lo Lim



Navigation	 Expert → Analog inputs → Analog input 1 to n → Lo Lo Lim (1531-1 to n)
Description	Use this function to enter the value for the lower alarm limit (LoLo alarm value parameter (→  179)).
User entry	Signed floating-point number
Factory setting	Negative floating-point number
Additional information	<i>Description</i>  If the output value Out value (→  169) exceeds this limit value, the LoLo alarm state parameter (→  179) is output. <i>User entry</i>  The value is entered in the defined units (Out unit parameter (→  175)) and must be in the range defined in the Out scale low parameter (→  174) and Out scale up parameter (→  174).

HiHi alarm value

Navigation	 Expert → Analog inputs → Analog input 1 to n → HiHi alarm value (1541-1 to n)
Description	Displays the alarm value for the upper alarm limit value (Hi Hi Lim parameter (→  176)).

User interface Signed floating-point number

HiHi alarm state

Navigation  Expert → Analog inputs → Analog input 1 to n → HiHi alarm state (1540–1 to n)

Description Displays the status for the upper alarm limit value (**Hi Hi Lim** parameter (→  176)).

User interface

- No alarm
- Alm statHiHi lim

Additional information *User interface*

 The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.

Hi alarm value

Navigation  Expert → Analog inputs → Analog input 1 to n → Hi alarm value (1539–1 to n)

Description Displays the alarm value for the upper warning limit value (**Hi Lim** parameter (→  176)).

User interface Signed floating-point number

Hi alarm state

Navigation  Expert → Analog inputs → Analog input 1 to n → Hi alarm state (1538–1 to n)

Description Displays the status for the upper warning limit value (**Hi Lim** parameter (→  176)).

User interface

- No warning
- Alm stat Hi lim

Additional information *User interface*

 The display contains information such as the time of the warning (date and time) and the value that triggered the alarm.

Lo alarm value

Navigation  Expert → Analog inputs → Analog input 1 to n → Lo alarm value (1543–1 to n)

Description Displays the alarm value for the lower warning limit value (**Lo Lim** parameter (→  177)).

User interface Signed floating-point number

Lo alarm state

Navigation  Expert → Analog inputs → Analog input 1 to n → Lo alarm state (1542-1 to n)

Description Displays the status for the lower warning limit value (**Lo Lim** parameter (→  177)).

User interface

- No warning
- Alrm stat Lo lim

Additional information *User interface*



The display contains information such as the time of the warning (date and time) and the value that triggered the alarm.

LoLo alarm value

Navigation  Expert → Analog inputs → Analog input 1 to n → LoLo alarm value (1545-1 to n)

Description Displays the alarm value for the lower alarm limit value (**Lo Lo Lim** parameter (→  177)).

User interface Signed floating-point number

LoLo alarm state

Navigation  Expert → Analog inputs → Analog input 1 to n → LoLo alarm state (1544-1 to n)

Description Displays the status for the lower alarm limit value (**Lo Lo Lim** parameter (→  177)).

User interface

- No alarm
- Alm statLoLo lim

Additional information *User interface*



The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.

Simulate enabled



Navigation  Expert → Analog inputs → Analog input 1 to n → Simulate enabled (1556-1 to n)

Description Use this function to enable or disable block simulation.

Selection	■ Disable ■ Enable
Factory setting	Disable
Additional information	<i>Description</i> The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated discrete I/O channel during operation.

Simulate value



Navigation	 Expert → Analog inputs → Analog input 1 to n → Simulate value (1558–1 to n)
Description	Use this function to enter a simulation value for the block.
User entry	Signed floating-point number
Factory setting	0
Additional information	<i>Description</i> The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated value during operation.

Simulate status



Navigation	 Expert → Analog inputs → Analog input 1 to n → Simulate status (1557–1 to n)
Description	Use this function to enter a simulation status for the block.
User entry	0 to 255
Factory setting	0
Additional information	<i>Description</i> The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated status during operation.

Out unit text



Navigation	 Expert → Analog inputs → Analog input 1 to n → Out unit text (1532–1 to n)
Description	Use this function to enter the out unit text: if a specific out unit does not appear in the code list, the user can enter the specific text. The unit code is then equivalent to the definition provided here.

User entry	Max. 16 characters such as letters, numbers or special characters (e.g. @, %, /).
Factory setting	NoUnit

3.8 "Discrete inputs" submenu

Navigation  Expert → Discrete inputs

► Discrete inputs

► Discrete input 1 to n →  181

3.8.1 "Discrete input 1 to n" submenu

Navigation  Expert → Discrete inputs → Discrete input 1 to n

► Discrete input 1 to n

Channel (2187-1 to n) →  181

Invert (2188-1 to n) →  182

Fail safe type (2189-1 to n) →  182

Fail-safe value (2190-1 to n) →  182

Out value (2194-1 to n) →  183

Out status (2203-1 to n) →  183

Out status (2193-1 to n) →  183

Channel

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Channel (2187-1 to n)
Description	Use this function to assign a measured variable to the particular function block.
Selection	■ Empty pipe det. ■ Low flow cut off ■ Verific. status *

* Visibility depends on order options or device settings

Factory setting Empty pipe det.

Invert

Navigation   Expert → Discrete inputs → Discrete input 1 to n → Invert (2188–1 to n)

Description Use this function to invert the input signal.

Selection

- Off
- On

Factory setting Off

Fail safe type

Navigation   Expert → Discrete inputs → Discrete input 1 to n → Fail safe type (2189–1 to n)

Description Use this function to select the failure mode.

Selection

- Fail-safe value
- Fallback value
- Off

Factory setting Off

Additional information *Selection*

If an input or simulation value has the status BAD, the function block uses this predefined failure value:

- Fail-safe value
A substitute value is used. This is specified in the **Fail-safe value** parameter (→  182).
- Fallback value
If the value was good at one point, then this last valid value is used.
- Off
The system continues to use the bad value.

Fail-safe value

Navigation   Expert → Discrete inputs → Discrete input 1 to n → Fail-safe value (2190–1 to n)

Prerequisite In **Fail safe type** parameter (→  182), the **Fail-safe value** option is selected.

Description Use this function to enter a failure value. The value entered is displayed as the output value (**Out value** parameter (→  183)) in the event of an error.

User entry 0 to 255

Factory setting 0

Out value

Navigation   Expert → Discrete inputs → Discrete input 1 to n → Out value (2194–1 to n)

Prerequisite In **Target mode** parameter (→  184), the **Auto** option is selected.

Description Displays the analog value which is calculated when the function is executed.

User interface 0 to 255

Out status

Navigation   Expert → Discrete inputs → Discrete input 1 to n → Out status (2203–1 to n)

Description Displays the current output status (Good, Bad, Uncertain).

User interface

- Good
- Uncertain
- Bad

Out status

Navigation   Expert → Discrete inputs → Discrete input 1 to n → Out status (2193–1 to n)

Prerequisite In **Target mode** parameter (→  184), the **Auto** option is selected.

Description Displays the current output status (hex value).

User interface 0 to 0xFF

Tag description



Navigation  Expert → Discrete inputs → Discrete input 1 to n → Tag description (2201–1 to n)

Description Use this function to enter a string to identify the block.

User entry Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Static revision

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Static revision (2200–1 to n)
Description	Displays the event counter: every write access to a static block parameter is counted.
User interface	0 to FFFF
Additional information	<i>Description</i>  Static parameters are parameters that are not changed by the process.

Strategy

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Strategy (2199–1 to n)
Description	Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.
User entry	0 to FFFF
Factory setting	0

Alert key

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Alert key (2182–1 to n)
Description	Use this function to enter the alert key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.
User entry	0 to 0xFF
Factory setting	0

Target mode

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Target mode (2202–1 to n)
Description	Displays the Target mode: The target mode indicates which mode of operation is used for this function block. This mode is generally set by a control application.
User interface	■ Auto ■ Man ■ Out of service

Mode block act

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Mode block act (2181–1 to n)
Description	Displays the Mode block act: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block act shows the actual mode in which the function block is currently operating. A comparison of the Mode block act with the Target mode indicates whether it was possible to reach the Target mode (→  184).
User interface	■ Auto ■ Man ■ Out of service
Additional information	<i>Description</i>  A comparison of the current mode with the target mode (Target mode parameter (→  184)) indicates whether it was possible to reach the target mode.

Mode block perm

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Mode block perm (2195–1 to n)
Description	Displays the Mode block perm: This defines which modes of operation in the Target mode (→  184) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.
User interface	0 to 255

Mode blk norm

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Mode blk norm (2192–1 to n)
Description	Displays the Mode blk norm: This is available to allow the operator to select the Mode blk norm from the available modes of operation. This can be set using an operating tool in order to help the user configure the operating mode of a function block.
User interface	■ Auto ■ Man ■ Out of service

Alarm summary

Navigation	 Expert → Discrete inputs → Discrete input 1 to n → Alarm summary (2191–1 to n)
Description	Displays the alarm summary: the current status of the block alarms is displayed. A summary of up to 16 statuses can be displayed.

User interface

- Discrete alarm
- Alm statHiHi lim
- Alm stat Hi lim
- Alm statLoLo lim
- Alm stat Lo lim
- Update Event

Additional information*Description*

Currently, the system only displays a change in a static parameter for 10 seconds, and violations of the early warning and alarm limits in the Discrete Inputs function block.

Batch ID**Navigation**

Expert → Discrete inputs → Discrete input 1 to n → Batch ID (2183–1 to n)

Description

Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.

User entry

Positive integer

Batch operation**Navigation**

Expert → Discrete inputs → Discrete input 1 to n → Batch operation (2184–1 to n)

Description

Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.

User entry

0 to 65 535

Factory setting

0

Batch phase**Navigation**

Expert → Discrete inputs → Discrete input 1 to n → Batch phase (2185–1 to n)

Description

Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.

User entry

0 to 65 535

Factory setting

0

Batch Recipe



Navigation	Expert → Discrete inputs → Discrete input 1 to n → Batch Recipe (2186–1 to n)
Description	Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).
User entry	0 to 65 535
Factory setting	0
Additional information	<i>Description</i> The unit is defined in IEC61512 Part1/ISA S88 but its meaning is different to that of the parameter unit, such as system units.

Simulate enabled



Navigation	Expert → Discrete inputs → Discrete input 1 to n → Simulate enabled (2196–1 to n)
Description	Use this function to enable or disable block simulation.
Selection	■ Disable ■ Enable
Factory setting	Disable
Additional information	<i>Description</i> The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated discrete I/O channel during operation.

Simulate value



Navigation	Expert → Discrete inputs → Discrete input 1 to n → Simulate value (2198–1 to n)
Description	Use this function to enter a simulation value for the block.
User entry	0 to 255
Factory setting	0
Additional information	<i>Description</i> The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated value during operation.

Simulate status	
Navigation	Expert → Discrete inputs → Discrete input 1 to n → Simulate status (2197–1 to n)
Description	Use this function to enter a simulation status for the block.
User entry	0 to 255
Factory setting	0
Additional information	<i>Description</i> The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated status during operation.

3.9 "Analog outputs" submenu

Navigation Expert → Analog outputs

► Analog outputs

► Analog output 1 to n

→ 188

3.9.1 "Analog output 1 to n" submenu

Navigation Expert → Analog outputs → Analog output 1 to n

► Analog output 1 to n

Set point val (1661–1 to n)

→ 189

Set point status (1660–1 to n)

→ 189

Fail safe time (1635–1 to n)

→ 189

Fail safe type (1636–1 to n)

→ 190

Fail-safe value (1637–1 to n)

→ 190

Out value (1647–1 to n)

→ 190

Out status (1669–1 to n)

→ 191

Out status (1645–1 to n)

→ 191

Set point val



Navigation	Expert → Analog outputs → Analog output 1 to n → Set point val (1661-1 to n)
Description	Use this function to enter an analog set point.
User entry	Signed floating-point number
Factory setting	0

Set point status



Navigation	Expert → Analog outputs → Analog output 1 to n → Set point status (1660-1 to n)
Description	Use this function to enter a status for the analog set point.
User entry	0 to 255
Factory setting	0

Fail safe time



Navigation	Expert → Analog outputs → Analog output 1 to n → Fail safe time (1635-1 to n)
Description	Use this function to enter a time span within which the criteria for an error must be met continuously before an error message or notice message is generated.
User entry	0 to 999.0
Factory setting	0
Additional information	<i>User entry</i> NOTE! If this parameter is used, error messages and notice messages are delayed by the set time before being relayed to the higher-level controller (DCS, etc.). ► Check in advance to ensure that the safety-specific requirements of the process would permit this. ► If the error and notice messages may not be suppressed, a value of 0 seconds must be configured here.

Fail safe type 	
Navigation	  Expert → Analog outputs → Analog output 1 to n → Fail safe type (1636–1 to n)
Description	Use this function to select the failure mode.
Selection	■ Fail-safe value ■ Fallback value ■ Off
Factory setting	Fallback value
Additional information	<i>Selection</i> If an input or simulation value has the status BAD, the function block uses this predefined failure value: ■ Fail-safe value A substitute value is used. This is specified in the Fail-safe value parameter (→  190). ■ Fallback value If the value was good at one point, then this last valid value is used. ■ Off The system continues to use the bad value.
Fail-safe value 	
Navigation	  Expert → Analog outputs → Analog output 1 to n → Fail-safe value (1637–1 to n)
Prerequisite	In Fail safe type parameter (→  190), the Fallback value option is selected.
Description	Use this function to enter a failure value. The value entered is displayed as the output value (Out value parameter (→  190)) in the event of an error.
User entry	Signed floating-point number
Factory setting	0
Out value	
Navigation	  Expert → Analog outputs → Analog output 1 to n → Out value (1647–1 to n)
Prerequisite	In Target mode parameter (→  192), the Auto option is selected.
Description	Displays the analog value which is calculated when the function is executed.
User interface	Signed floating-point number

Out status

Navigation	  Expert → Analog outputs → Analog output 1 to n → Out status (1669–1 to n)
Description	Displays the current output status (Good, Bad, Uncertain).
User interface	■ Good ■ Uncertain ■ Bad

Out status

Navigation	  Expert → Analog outputs → Analog output 1 to n → Out status (1645–1 to n)
Prerequisite	In Target mode parameter (→  192), the Auto option is selected.
Description	Displays the current output status (hex value).
User interface	0 to 0xFF

Tag description

Navigation	 Expert → Analog outputs → Analog output 1 to n → Tag description (1667–1 to n)
Description	Use this function to enter a string to identify the block.
User entry	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Static revision

Navigation	 Expert → Analog outputs → Analog output 1 to n → Static revision (1666–1 to n)
Description	Displays the event counter: every write access to a static block parameter is counted.
User interface	0 to FFFF
Additional information	<i>Description</i>  Static parameters are parameters that are not changed by the process.

Strategy



Navigation  Expert → Analog outputs → Analog output 1 to n → Strategy (1665–1 to n)

Description Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.

User entry 0 to FFFF

Factory setting 0

Alert key



Navigation  Expert → Analog outputs → Analog output 1 to n → Alert key (1632–1 to n)

Description Use this function to enter the alert key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.

User entry 0 to 0xFF

Factory setting 0

Target mode



Navigation  Expert → Analog outputs → Analog output 1 to n → Target mode (1668–1 to n)

Description Displays the Target mode: The target mode indicates which mode of operation is used for this function block. This mode is generally set by a control application.

User interface

- Auto
- Local override
- Man
- Out of service
- Remote Cascaded

Mode block act

Navigation  Expert → Analog outputs → Analog output 1 to n → Mode block act (1631–1 to n)

Description Displays the Mode block act: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block act shows the actual mode in which the function block is currently operating. A comparison of the Mode block act with the Target mode indicates whether it was possible to reach the Target mode (→  192).

User interface	■ Auto ■ Local override ■ Man ■ Out of service ■ Remote Cascaded
-----------------------	--

Additional information	<i>Description</i>  A comparison of the current mode with the target mode (Target mode parameter (→  192)) indicates whether it was possible to reach the target mode.
-------------------------------	---

Mode block perm

Navigation	 Expert → Analog outputs → Analog output 1 to n → Mode block perm (1648–1 to n)
Description	Displays the Mode block perm: This defines which modes of operation in the Target mode (→  192) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.
User interface	0 to 255

Mode blk norm

Navigation	 Expert → Analog outputs → Analog output 1 to n → Mode blk norm (1643–1 to n)
Description	Displays the Mode blk norm: This is available to allow the operator to select the Mode blk norm from the available modes of operation. This can be set using an operating tool in order to help the user configure the operating mode of a function block.
User interface	■ Auto ■ Local override ■ Man ■ Out of service ■ Remote Cascaded

Alarm summary

Navigation	 Expert → Analog outputs → Analog output 1 to n → Alarm summary (1642–1 to n)
Description	Displays the alarm summary: the current status of the block alarms is displayed. A summary of up to 16 statuses can be displayed.
User interface	■ Discrete alarm ■ Alm statHiHi lim ■ Alrm stat Hi lim ■ Alm statLoLo lim ■ Alrm stat Lo lim ■ Update Event

Additional information*Description*

Currently, the system only displays a change in a static parameter for 10 seconds, and violations of the early warning and alarm limits in the Analog Outputs function block.

Batch ID**Navigation**

Expert → Analog outputs → Analog output 1 to n → Batch ID (1633–1 to n)

Description

Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.

User entry

Positive integer

Batch operation**Navigation**

Expert → Analog outputs → Analog output 1 to n → Batch operation (1639–1 to n)

Description

Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.

User entry

0 to 65 535

Factory setting

0

Batch phase**Navigation**

Expert → Analog outputs → Analog output 1 to n → Batch phase (1640–1 to n)

Description

Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.

User entry

0 to 65 535

Factory setting

0

Batch Recipe**Navigation**

Expert → Analog outputs → Analog output 1 to n → Batch Recipe (1641–1 to n)

Description

Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).

User entry 0 to 65 535

Factory setting 0

Additional information *Description*



The unit is defined in IEC61512 Part1/ISA S88 but its meaning is different to that of the parameter unit, such as system units.

PVscale lo range



Navigation Expert → Analog outputs → Analog output 1 to n → PVscale lo range (1651-1 to n)

Description Use this function to enter the lower value range for the input value (Process Value Scale) in system units. The process value scale normalizes the input value to a user-specific range.

User entry Signed floating-point number

Factory setting 0

PVscale up range



Navigation Expert → Analog outputs → Analog output 1 to n → PVscale up range (1652-1 to n)

Description Use this function to enter the upper value range for the input value (Process Value Scale) in system units. The process value scale normalizes the input value to a user-specific range.

User entry Signed floating-point number

Factory setting 100.0

Readback value

Navigation Expert → Analog outputs → Analog output 1 to n → Readback value (1659-1 to n)

Description Displays the readback value. The readback value indicates the current position of the control element within the travel range (between the open and close position) in PV scale units.

User interface Signed floating-point number

Readback status

Navigation	 Expert → Analog outputs → Analog output 1 to n → Readback status (1658–1 to n)
Description	Displays the readback status. The readback status contains the status information of the slave.
User interface	0 to 255

RCAS in value



Navigation	 Expert → Analog outputs → Analog output 1 to n → RCAS in value (1655–1 to n)
Description	Use this function to enter the RCAS (Remote Cascade) in value. The block set point is set by a control application via the remote cascade RCAS in value parameter (→  196). The normal algorithm calculates the output value of the block on the basis of this set point.
User entry	Signed floating-point number
Factory setting	0

RCAS in status



Navigation	 Expert → Analog outputs → Analog output 1 to n → RCAS in status (1654–1 to n)
Description	Use this function to enter the RCAS (Remote Cascade) in status. Defines the status for the RCAS in value (→  196).
User entry	0 to 255
Factory setting	0

Input channel



Navigation	 Expert → Analog outputs → Analog output 1 to n → Input channel (1670–1 to n)
Description	Use this function to select the input channel. The number of logical hardware channels from the converter that is connected to this I/O block.
Selection	None
Factory setting	None

Output channel 	
Navigation	 Expert → Analog outputs → Analog output 1 to n → Output channel (1671–1 to n)
Description	Use this function to select the output channel. The number of logical hardware channels to the converter that is connected to this I/O block.
Selection	■ External temp. ■ Ext. ref.density ■ External press. ■ S&W ■ Water cut
Factory setting	External press.
RCAS out value	
Navigation	 Expert → Analog outputs → Analog output 1 to n → RCAS out value (1657–1 to n)
Description	Displays the RCAS out value. Displays the set point of the block which is made available to the higher-level host for monitoring/back calculation and which makes it possible to take action under certain conditions or in a different mode.
User interface	Signed floating-point number
RCAS out status	
Navigation	 Expert → Analog outputs → Analog output 1 to n → RCAS out status (1656–1 to n)
Description	Displays the RCAS out status. Displays the status of the set point.
User interface	0 to 0xFF
Pos value	
Navigation	 Expert → Analog outputs → Analog output 1 to n → Pos value (1650–1 to n)
Description	Displays the current value of the positioner.
User interface	0 to 255

Position status

Navigation	 Expert → Analog outputs → Analog output 1 to n → Position status (1649–1 to n)
Description	Displays the current status of the positioner.
User interface	0 to 255

Setp. deviation

Navigation	 Expert → Analog outputs → Analog output 1 to n → Setp. deviation (1653–1 to n)
Description	Displays the deviation between the set point (Set point val parameter (→  189)) and the actual value (Readback value parameter (→  195)).
User interface	Signed floating-point number

Simulate enabled

Navigation	 Expert → Analog outputs → Analog output 1 to n → Simulate enabled (1662–1 to n)
Description	Use this function to enable or disable block simulation.
Selection	■ Disable ■ Enable
Factory setting	Disable
Additional information	<i>Description</i> The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated discrete I/O channel during operation.

Simulate value

Navigation	 Expert → Analog outputs → Analog output 1 to n → Simulate value (1664–1 to n)
Description	Use this function to enter a simulation value.
User entry	Signed floating-point number
Factory setting	0

Additional information		<i>Description</i> The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated value during operation.	
Simulate status			
Navigation		Expert → Analog outputs → Analog output 1 to n → Simulate status (1663–1 to n)	
Description	Use this function to enter a simulation status for the block.		
User entry	0 to 255		
Factory setting	0		
Additional information		<i>Description</i> The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated status during operation.	
Increase close			
Navigation		Expert → Analog outputs → Analog output 1 to n → Increase close (1638–1 to n)	
Description	Use this function to enter the effective direction of the positioner in automatic mode.		
User entry	0 to 255		
Factory setting	0		
Out scale up			
Navigation		Expert → Analog outputs → Analog output 1 to n → Out scale up (1646–1 to n)	
Description	Use this function to enter the upper value range for the output value in system units.		
User entry	Signed floating-point number		
Factory setting	100.0		

Out scale low	
Navigation	 Expert → Analog outputs → Analog output 1 to n → Out scale low (1644-1 to n)
Description	Use this function to enter the lower value range for the output value in system units.
User entry	Signed floating-point number
Factory setting	0

3.10 "Discrete outputs" submenu

Navigation   Expert → Discrete outputs

► Discrete outputs

► Discr. out. 1 to n

→  200

3.10.1 "Discrete output 1 to n" submenu

Navigation   Expert → Discrete outputs → Discr. out. 1 to n

► Discr. out. 1 to n

Set point val (1715-1 to n)

→  201

Set point status (1714-1 to n)

→  201

Invert (1692-1 to n)

→  201

Fail safe time (1697-1 to n)

→  201

Fail safe type (1696-1 to n)

→  202

Fail-safe value (1693-1 to n)

→  202

Out value (1704-1 to n)

→  203

Out status (1723-1 to n)

→  203

Out status (1703-1 to n)

→  203

Set point val		
Navigation	  Expert → Discrete outputs → Discr. out. 1 to n → Set point val (1715–1 to n)	
Description	Use this function to enter an analog set point.	
User entry	0 to 255	
Factory setting	0	
Set point status		
Navigation	  Expert → Discrete outputs → Discr. out. 1 to n → Set point status (1714–1 to n)	
Description	Use this function to enter a status for the analog set point.	
User entry	0 to 255	
Factory setting	0	
Invert		
Navigation	  Expert → Discrete outputs → Discr. out. 1 to n → Invert (1692–1 to n)	
Description	Use this function to switch inversion on and off. Specifies whether the set point should be inverted before the value is set as the output value or the RCAS value (in the automatic mode).	
Selection	■ Off ■ On	
Factory setting	Off	
Fail safe time		
Navigation	  Expert → Discrete outputs → Discr. out. 1 to n → Fail safe time (1697–1 to n)	
Description	Use this function to enter a time span within which the criteria for an error must be met continuously before an error message or notice message is generated.	
User entry	Signed floating-point number	
Factory setting	0	

Additional information *User entry***NOTE!**

If this parameter is used, error messages and notice messages are delayed by the set time before being relayed to the higher-level controller (DCS, etc.).

- Check in advance to ensure that the safety-specific requirements of the process would permit this.
- If the error and notice messages may not be suppressed, a value of 0 seconds must be configured here.

Fail safe type**Navigation**

Expert → Discrete outputs → Discr. out. 1 to n → Fail safe type (1696–1 to n)

Description

Use this function to select the failure mode.

Selection

- Fail-safe value
- Fallback value
- Off

Factory setting

Fallback value

Additional information*Selection*

If an input or simulation value has the status BAD, the function block uses this predefined failure value:

- Fail-safe value
A substitute value is used. This is specified in the **Fail-safe value** parameter (→ 202).
- Fallback value
If the value was good at one point, then this last valid value is used.
- Off
The system continues to use the bad value.

Fail-safe value**Navigation**

Expert → Discrete outputs → Discr. out. 1 to n → Fail-safe value (1693–1 to n)

Prerequisite

In **Fail safe type** parameter (→ 202), the **Fail-safe value** option is selected.

Description

Use this function to enter a failure value. The value entered is displayed as the output value (**Out value** parameter (→ 203)) in the event of an error.

User entry

0 to 255

Factory setting

0

Out value

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Out value (1704–1 to n)
Prerequisite	In Target mode parameter (→  204), the Auto option is selected.
Description	Displays the analog value which is calculated when the function is executed.
User interface	0 to 255

Out status

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Out status (1723–1 to n)
Description	Displays the current output status (Good, Bad, Uncertain).
User interface	■ Good ■ Uncertain ■ Bad

Out status

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Out status (1703–1 to n)
Prerequisite	In Target mode parameter (→  204), the Auto option is selected.
Description	Displays the current output status (hex value).
User interface	0 to 0xFF

Tag description

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Tag description (1721–1 to n)
Description	Use this function to enter a string to identify the block.
User entry	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Static revision

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Static revision (1720–1 to n)
Description	Displays the event counter: every write access to a static block parameter is counted.
User interface	0 to FFFF
Additional information	<i>Description</i>  Static parameters are parameters that are not changed by the process.

Strategy

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Strategy (1719–1 to n)
Description	Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.
User entry	0 to FFFF
Factory setting	0

Alert key

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Alert key (1694–1 to n)
Description	Use this function to enter the alert key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.
User entry	0 to 0xFF
Factory setting	0

Target mode

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Target mode (1722–1 to n)
Description	Displays the Target mode: The target mode specifies which mode of operation is used for this function block. This mode is generally set by a control application.

User interface	■ Local override ■ Remote Cascaded ■ Man ■ Out of service ■ Auto
-----------------------	--

Mode block act

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Mode block act (1691–1 to n)
Description	Displays the Mode block act: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block act shows the actual mode in which the function block is currently operating. A comparison of the Mode block act with the Target mode indicates whether it was possible to reach the Target mode (→  204).
User interface	■ Local override ■ Remote Cascaded ■ Man ■ Out of service ■ Auto
Additional information	<i>Description</i>  A comparison of the current mode with the target mode (Target mode parameter (→  204)) indicates whether it was possible to reach the target mode.

Mode block perm

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Mode block perm (1705–1 to n)
Description	Displays the Mode block perm: This defines which modes of operation in the Target mode (→  204) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.
User interface	0 to 255

Mode blk norm

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Mode blk norm (1702–1 to n)
Description	Displays the Mode blk norm: This is available to allow the operator to select the Mode blk norm from the available modes of operation. This can be set using an operating tool in order to help the user configure the operating mode of a function block.

User interface	■ Local override ■ Remote Cascaded ■ Man ■ Out of service ■ Auto
-----------------------	--

Alarm summary

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Alarm summary (1701–1 to n)
Description	Displays the alarm summary: the current status of the block alarms is displayed. A summary of up to 16 statuses can be displayed.
User interface	■ Discrete alarm ■ Alm statHiHi lim ■ Alm stat Hi lim ■ Alm statLoLo lim ■ Alm stat Lo lim ■ Update Event
Additional information	<i>Description</i>  Currently, the system only displays a change in a static parameter for 10 seconds, and violations of the early warning and alarm limits in the Discrete Outputs function block.

Batch ID

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Batch ID (1695–1 to n)
Description	Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.
User entry	Positive integer

Batch operation

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Batch operation (1698–1 to n)
Description	Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.
User entry	0 to 65 535
Factory setting	0

Batch phase



Navigation	Expert → Discrete outputs → Discr. out. 1 to n → Batch phase (1699–1 to n)
Description	Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.
User entry	0 to 65 535
Factory setting	0

Batch Recipe



Navigation	Expert → Discrete outputs → Discr. out. 1 to n → Batch Recipe (1700–1 to n)
Description	Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).
User entry	0 to 65 535
Factory setting	0
Additional information	<i>Description</i> The unit is defined in IEC61512 Part1/ISA S88 but its meaning is different to that of the parameter unit, such as system units.

Readback value

Navigation	Expert → Discrete outputs → Discr. out. 1 to n → Readback value (1713–1 to n)
Description	Displays the readback value. The readback value indicates the current position of the control element and the element's sensors.
User interface	0 to 255

Readback status

Navigation	Expert → Discrete outputs → Discr. out. 1 to n → Readback status (1712–1 to n)
Description	Displays the readback status. Displays the status of the readback value.
User interface	0 to 255

RCAS in value



Navigation  Expert → Discrete outputs → Discr. out. 1 to n → RCAS in value (1707–1 to n)

Description Use this function to enter the RCAS (Remote Cascade) in value. The block set point is set by a control application via the remote cascade **RCAS in value** parameter (→  208). The normal algorithm calculates the output value of the block on the basis of this set point.

User entry 0 to 255

Factory setting 0

RCAS in status



Navigation  Expert → Discrete outputs → Discr. out. 1 to n → RCAS in status (1706–1 to n)

Description Use this function to enter the RCAS (Remote Cascade) in status. Defines the status for the RCAS in value (→  208).

User entry 0 to 255

Factory setting 0

Input channel



Navigation  Expert → Discrete outputs → Discr. out. 1 to n → Input channel (1724–1 to n)

Description Use this function to select the input channel. The number of logical hardware channels from the converter that is connected to this I/O block.

Selection None

Factory setting None

Output channel



Navigation  Expert → Discrete outputs → Discr. out. 1 to n → Output channel (1725–1 to n)

Description Use this function to select the output channel. The number of logical hardware channels to the converter that is connected to this I/O block.

Selection	■ Start verificat. * ■ Zero point adj. ■ Flow override ■ I/O module 2 ■ I/O module 3 ■ I/O module 4 ■ Liqu. type conc.
------------------	--

Factory setting	Flow override
------------------------	---------------

RCAS out value

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → RCAS out value (1711-1 to n)
Description	Displays the RCAS out value. Displays the set point of the block which is made available to the higher-level host for monitoring/back calculation and which makes it possible to take action under certain conditions or in a different mode.
User interface	0 to 255

RCAS out status

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → RCAS out status (1708-1 to n)
Description	Displays the RCAS out status. Displays the status of the set point.
User interface	0 to 255

Simulate enabled

Navigation	 Expert → Discrete outputs → Discr. out. 1 to n → Simulate enabled (1716-1 to n)
Description	Use this function to enable or disable block simulation.
Selection	■ Disable ■ Enable
Factory setting	Disable
Additional information	<i>Description</i> The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated discrete I/O channel during operation.

* Visibility depends on order options or device settings

Simulate value		
Navigation	Expert → Discrete outputs → Discr. out. 1 to n → Simulate value (1718–1 to n)	
Description	Use this function to enter a simulation value.	
User entry	0 to 255	
Factory setting	0	
Additional information	<i>Description</i> The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated value during operation.	
Simulate status		

Navigation	Expert → Discrete outputs → Discr. out. 1 to n → Simulate status (1717–1 to n)
Description	Use this function to enter a simulation status for the block.
User entry	0 to 255
Factory setting	0
Additional information	<i>Description</i> The simulation is used to bypass the physical I/O channel. In this way, the block remains in the normal mode and uses the simulated status during operation.

3.11 "Application" submenu

Navigation Expert → Application

► Application

► Totalizer 1 to n

→ 211

► Viscosity

→ 224

► Concentration

→ 224

► Petroleum

→ 224

3.11.1 "Totalizer 1 to n" submenu

Navigation  Expert → Application → Totalizer 1 to n

► Totalizer 1 to n		
Assign variable (3808-1 to n)	→ 	211
Unit totalizer (3835-1 to n)	→ 	212
Control Tot. 1 to n (3830-1 to n)	→ 	213
Preset value 1 to n (3829-1 to n)	→ 	214
Operation mode (3823-1 to n)	→ 	214
Failure mode (3810-1 to n)	→ 	215
Totalizer val. 1 to n (3827-1 to n)	→ 	215
Tot. status 1 to n (3826-1 to n)	→ 	216
Status (Hex) 1 to n (3825-1 to n)	→ 	216

Assign variable



Navigation  Expert → Application → Totalizer 1 to n → Assign variable (3808-1 to n)

Description Use this function to select a process variable for the Totalizer 1 to n.

Selection

- Mass flow
- Volume flow
- Correct.vol.flow^{*}
- Target mass flow^{*}
- Carrier mass fl.^{*}
- Target vol. flow^{*}
- Carrier vol. fl.^{*}
- Targ.corr.vol.fl^{*}
- Carr.corr.vol.fl^{*}
- GSV flow^{*}
- GSVa^{*}
- NSV flow^{*}
- NSVa^{*}
- S&W volume flow^{*}
- Oil mass flow^{*}
- Water mass flow^{*}
- Oil volume flow^{*}

* Visibility depends on order options or device settings

- Water vol. flow *
- Oil corr.vol.fl. *
- Water corr.v.fl. *

Factory setting

Mass flow

Additional information

Description

 If the option selected is changed, the device resets the totalizer to 0.

Unit totalizer

Navigation

 Expert → Application → Totalizer 1 to n → Unit totalizer (3835-1 to n)

Description

Use this function to select the process variable of a totalizer.

 The unit is selected separately for each totalizer. It is independent of the selection made in the **System units** submenu (→  60).

Selection

- | SI units | US units |
|----------|----------|
| ■ g * | ■ oz * |
| ■ kg * | ■ lb * |
| ■ t * | ■ STon * |

* Visibility depends on order options or device settings

or

- | SI units | US units | Imperial units |
|---------------------|---------------------|-------------------|
| ■ cm ³ * | ■ af * | ■ gal (imp) * |
| ■ dm ³ * | ■ ft ³ * | ■ Mgal (imp) * |
| ■ m ³ * | ■ fl oz (us) * | ■ bbl (imp;oil) * |
| ■ ml * | ■ gal (us) * | |
| ■ l * | ■ kgal (us) * | |
| ■ hl * | ■ Mgal (us) * | |
| ■ Ml Mega * | ■ bbl (us;oil) * | |
| | ■ bbl (us;tank) * | |

* Visibility depends on order options or device settings

or

- | US units | Imperial units |
|-------------------|--------------------|
| ■ bbl (us;liq.) * | ■ bbl (imp;beer) * |
| ■ bbl (us;beer) * | |

* Visibility depends on order options or device settings

or

* Visibility depends on order options or device settings

SI units

- Nl^*
- Nm^3^*
- Sl^*
- Sm^3^*

US units

- Sft^3^*
- Sgal (us)^*
- Sbbl (us;liq.)^*

Imperial units

- Sgal (imp)^*

* Visibility depends on order options or device settings

Factory setting

Country-specific:

- kg
- lb

Additional information*Selection*

The selection is independent of the process variable selected in the **Assign variable** parameter (→ 211).

Dependency

The following parameters depend on the option selected:

- **Alarm hysteresis** parameter (→ 220)
- **Hi Hi Lim** parameter (→ 220)
- **Hi Lim** parameter (→ 221)
- **Lo Lim** parameter (→ 221)
- **Lo Lo Lim** parameter (→ 222)
- **Totalizer val.** parameter (→ 54)
- **Preset value** parameter (→ 214)

Control Tot. 1 to n**Navigation**

 Expert → Application → Totalizer 1 to n → Control Tot. 1 to n (3830-1 to n)

Description

Use this function to select the control of totalizer value 1-3.

Selection

- Totalize
- Reset + hold
- Preset + hold

Factory setting

Totalize

Additional information*Selection*

- **Totalize**
The totalizer is started or continues totalizing with the current counter reading.
- **Reset + hold**
The totaling process is stopped and the totalizer is reset to 0.
- **Preset + hold**
The totaling process is stopped and the totalizer is set to its defined start value from the **Preset value** parameter.

Preset value 1 to n

Navigation	 Expert → Application → Totalizer 1 to n → Preset value 1 to n (3829–1 to n)
Description	Use this function to enter an initial value for the specific totalizer.
User entry	Signed floating-point number
Factory setting	Country-specific: ■ kg ■ lb
Additional information	<i>User entry</i>  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  212). <i>Example</i> This configuration is suitable for applications such as iterative filling processes with a fixed batch quantity.

Operation mode

Navigation	 Expert → Application → Totalizer 1 to n → Operation mode (3823–1 to n)
Description	Use this function to select how the totalizer summates the flow.
Selection	■ Net flow total ■ Forward total ■ Reverse total ■ Last valid value
Factory setting	Net flow total
Additional information	<i>Selection</i> ■ Net flow total Positive and negative flow values are totalized and balanced against one another. Net flow is registered in the flow direction. ■ Forward total Only the flow in the forward flow direction is totalized. ■ Reverse total Only the flow against the forward flow direction is totalized (= reverse flow total). ■ Last valid value The value is frozen. Totaling is stopped.

Failure mode	
Navigation	Expert → Application → Totalizer 1 to n → Failure mode (3810–1 to n)
Description	Use this function to select how a totalizer behaves in the event of a device alarm.
Selection	■ Stop ■ Actual value ■ Last valid value
Factory setting	Actual value
Additional information	<i>Description</i> This setting does not affect the failsafe mode of other totalizers and the outputs. This is specified in separate parameters. <i>Selection</i> ■ Stop Totalizing is stopped when a device alarm occurs. ■ Actual value The totalizer continues to count based on the current measured value; the device alarm is ignored. ■ Last valid value The totalizer continues to count based on the last valid measured value before the device alarm occurred.
Totalizer val. 1 to n	
Navigation	Expert → Application → Totalizer 1 to n → Totalizer val. 1 to n (3827–1 to n)
Prerequisite	In the Target mode parameter (→ 217), the Auto option is selected.
Description	Displays the current reading for totalizer 1-3.
User interface	Signed floating-point number
Additional information	<i>Description</i> In the event of an error, the totalizer adopts the mode defined in the Failure mode parameter (→ 215). <i>User interface</i> The value of the process variable totalized since measuring began can be positive or negative. This depends on the settings in the Operation mode parameter (→ 214). <i>Dependency</i> The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→ 212).

Tot. status 1 to n

Navigation	 Expert → Application → Totalizer 1 to n → Tot. status 1 to n (3826–1 to n)
Description	Displays the status of the particular totalizer.
User interface	■ Good ■ Uncertain ■ Bad

Status (Hex) 1 to n

Navigation	 Expert → Application → Totalizer 1 to n → Status (Hex) 1 to n (3825–1 to n)
Prerequisite	In Target mode parameter (→  217), the Auto option is selected.
Description	Displays the status value (hex) of the particular totalizer.
User interface	0 to 0xFF

Tag description

Navigation	 Expert → Application → Totalizer 1 to n → Tag description (3833–1 to n)
Description	Use this function to enter a string to identify the block.
User entry	Max. 32 characters such as letters, numbers or special characters (e.g. @, %, /).

Static revision

Navigation	 Expert → Application → Totalizer 1 to n → Static revision (3832–1 to n)
Description	Displays the event counter: every write access to a static block parameter is counted.
User interface	0 to FFFF
Additional information	<i>Description</i>  Static parameters are parameters that are not changed by the process.

Strategy



Navigation	 Expert → Application → Totalizer 1 to n → Strategy (3831–1 to n)
Description	Use this function to enter the strategy: makes it possible to group blocks by entering identical numbers.
User entry	0 to FFFF
Factory setting	0

Alert key



Navigation	 Expert → Application → Totalizer 1 to n → Alert key (3803–1 to n)
Description	Use this function to enter the alert key: identifies the section of the plant where the transmitter is located. This helps in pinpointing events.
User entry	0 to 0xFF
Factory setting	0

Target mode



Navigation	 Expert → Application → Totalizer 1 to n → Target mode (3834–1 to n)
Description	Displays the Target mode: The target mode indicates which mode of operation is used for this function block. This mode is generally set by a control application.
User interface	■ Auto ■ Man ■ Out of service

Mode block act

Navigation	 Expert → Application → Totalizer 1 to n → Mode block act (3801–1 to n)
Description	Displays the Mode block act: Under certain conditions, it is possible that a function block will not operate in the required mode. In this case, the Mode block act shows the actual mode in which the function block is currently operating. A comparison of the Mode block act with the Target mode indicates whether it was possible to reach the Target mode (→  217).
User interface	■ Auto ■ Man ■ Out of service

Additional information *Description*

A comparison of the current mode with the target mode (**Target mode** parameter (→ 217)) indicates whether it was possible to reach the target mode.

Mode block perm**Navigation**

Expert → Application → Totalizer 1 to n → Mode block perm (3828–1 to n)

Description

Displays the Mode block perm: This defines which modes of operation in the Target mode (→ 217) are available for the function block. The operating modes that are supported vary depending on the type and function of the block.

User interface

0 to 255

Mode blk norm**Navigation**

Expert → Application → Totalizer 1 to n → Mode blk norm (3824–1 to n)

Description

Displays the Mode blk norm: This is available to allow the operator to select the Mode blk norm from the available modes of operation. This can be set using an operating tool in order to help the user configure the operating mode of a function block.

User interface

- Auto
- Man
- Out of service

Alarm summary**Navigation**

Expert → Application → Totalizer 1 to n → Alarm summary (3809–1 to n)

Description

Displays the alarm summary: the current status of the block alarms is displayed. A summary of up to 16 statuses can be displayed.

User interface

- Discrete alarm
- Alm statHiHi lim
- Alm stat Hi lim
- Alm statLoLo lim
- Alm stat Lo lim
- Update Event

Additional information *Description*

Currently, the system only displays a change in a static parameter for 10 seconds, and violations of the early warning and alarm limits in the Totalizer function block.

Batch ID		
Navigation	 Expert → Application → Totalizer 1 to n → Batch ID (3804–1 to n)	
Description	Use this function to enter the batch ID: identification of a specific batch to make it possible to assign device-specific information (e.g. errors, alarm conditions etc.) to the batching process.	
User entry	Positive integer	
Factory setting	0	
Batch operation		
Navigation	 Expert → Application → Totalizer 1 to n → Batch operation (3805–1 to n)	
Description	Use this function to enter the batch operation: control recipe operation number to identify the active control recipe operation.	
User entry	0 to 65 535	
Factory setting	0	
Batch phase		
Navigation	 Expert → Application → Totalizer 1 to n → Batch phase (3806–1 to n)	
Description	Use this function to enter the batch phase: control recipe phase number to identify the active control recipe operation.	
User entry	0 to 65 535	
Factory setting	0	
Batch Recipe		
Navigation	 Expert → Application → Totalizer 1 to n → Batch Recipe (3807–1 to n)	
Description	Use this function to enter the batch recipe unit procedure (RUP): identification of the active control recipe unit procedure or the associated unit (e.g. inductor, centrifuge, drying agent).	
User entry	0 to 65 535	
Factory setting	0	

Additional information *Description*

The unit is defined in IEC61512 Part1/ISA S88 but its meaning is different to that of the parameter unit, such as system units.

Alarm hysteresis**Navigation**

Expert → Application → Totalizer 1 to n → Alarm hysteresis (3802–1 to n)

Description

Use this function to enter the hysteresis value for the upper and lower warning or alarm limit values.

User entry

Signed floating-point number

Factory setting

0 kg

Additional information

User entry



The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 212).

Hi Hi Lim**Navigation**

Expert → Application → Totalizer 1 to n → Hi Hi Lim (3815–1 to n)

Description

Use this function to enter the value for the upper alarm limit of the totalizer (**HiHi alarm value** parameter (→ 222)).

User entry

Signed floating-point number

Factory setting

Positive floating-point number

Additional information

Description



If the output value Out value (→ 169) exceeds this limit value, the **HiHi alarm state** parameter (→ 222) is output.

User entry



The value is entered in the defined units (**Out unit** parameter (→ 175)) and must be in the range defined in the **Out scale low** parameter (→ 174) and **Out scale up** parameter (→ 174).



The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→ 212).

Hi Lim 	
Navigation	 Expert → Application → Totalizer 1 to n → Hi Lim (3816-1 to n)
Description	Use this function to enter the value for the upper warning limit of the totalizer (Hi alarm value parameter (→  223)).
User entry	Signed floating-point number
Factory setting	Positive floating-point number
Additional information	<i>Description</i>  If the output value Out value (→  169) exceeds this limit value, the Hi alarm state parameter (→  223) is output. <i>User entry</i>  The value is entered in the defined units (Out unit parameter (→  175)) and must be in the range defined in the Out scale low parameter (→  174) and Out scale up parameter (→  174).  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  212).
Lo Lim 	
Navigation	 Expert → Application → Totalizer 1 to n → Lo Lim (3819-1 to n)
Description	Use this function to enter the value for the lower warning limit of the totalizer (Lo alarm value parameter (→  223)).
User entry	Signed floating-point number
Factory setting	Negative floating-point number
Additional information	<i>Description</i>  If the output value Out value (→  169) exceeds this limit value, the Lo alarm state parameter (→  223) is output. <i>User entry</i>  The value is entered in the defined units (Out unit parameter (→  175)) and must be in the range defined in the Out scale low parameter (→  174) and Out scale up parameter (→  174).  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  212).

Lo Lo Lim

Navigation	 Expert → Application → Totalizer 1 to n → Lo Lo Lim (3822–1 to n)
Description	Use this function to enter the value for the lower alarm limit of the totalizer (LoLo alarm value parameter (→  224)).
User entry	Signed floating-point number
Factory setting	Negative floating-point number
Additional information	<i>Description</i>  If the output value Out value (→  169) exceeds this limit value, the LoLo alarm state parameter (→  224) is output. <i>User entry</i>  The value is entered in the defined units (Out unit parameter (→  175)) and must be in the range defined in the Out scale low parameter (→  174) and Out scale up parameter (→  174).  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  212).

HiHi alarm value

Navigation	 Expert → Application → Totalizer 1 to n → HiHi alarm value (3814–1 to n)
Description	Displays the alarm value for the upper alarm limit value (Hi Hi Lim parameter (→  220)).
User interface	Signed floating-point number

HiHi alarm state

Navigation	 Expert → Application → Totalizer 1 to n → HiHi alarm state (3813–1 to n)
Description	Displays the status for the upper alarm limit value (Hi Hi Lim parameter (→  220)).
User interface	■ No alarm ■ Alm statHiHi lim
Additional information	<i>User interface</i>  The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.

Hi alarm value

Navigation	 Expert → Application → Totalizer 1 to n → Hi alarm value (3812-1 to n)
Description	Displays the warning value for the upper warning limit value (Hi Lim parameter (→  221)).
User interface	Signed floating-point number

Hi alarm state

Navigation	 Expert → Application → Totalizer 1 to n → Hi alarm state (3811-1 to n)
Description	Displays the status for the upper warning limit value (Hi Lim parameter (→  221)).
User interface	■ No warning ■ Alrm stat Hi lim
Additional information	<i>User interface</i>  The display contains information such as the time of the warning (date and time) and the value that triggered the alarm.

Lo alarm value

Navigation	 Expert → Application → Totalizer 1 to n → Lo alarm value (3818-1 to n)
Description	Displays the warning value for the lower warning limit value (Lo Lim parameter (→  221)).
User interface	Signed floating-point number

Lo alarm state

Navigation	 Expert → Application → Totalizer 1 to n → Lo alarm state (3817-1 to n)
Description	Displays the status for the lower warning limit value (Lo Lim parameter (→  221)).
User interface	■ No warning ■ Alrm stat Lo lim
Additional information	<i>User interface</i>  The display contains information such as the time of the warning (date and time) and the value that triggered the alarm.

LoLo alarm value

Navigation	Expert → Application → Totalizer 1 to n → LoLo alarm value (3821-1 to n)
Description	Displays the alarm value for the lower alarm limit value (Lo Lo Lim parameter (→ 222)).
User interface	Signed floating-point number

LoLo alarm state

Navigation	Expert → Application → Totalizer 1 to n → LoLo alarm state (3820-1 to n)
Description	Displays the status for the lower alarm limit value (Lo Lo Lim parameter (→ 222)).
User interface	■ No alarm ■ Alm statLoLo lim
Additional information	<i>User interface</i> The display contains information such as the time of the alarm (date and time) and the value that triggered the alarm.

3.11.2 "Viscosity" submenu

- Only available for Promass I.
- For detailed information on the parameter descriptions for the **Viscosity** application package, refer to the Special Documentation for the device → 7

Navigation Expert → Application → Viscosity



3.11.3 "Concentration" submenu

- For detailed information on the parameter descriptions for the **Concentration** application package, refer to the Special Documentation for the device → 7

Navigation Expert → Application → Concentration



3.11.4 "Petroleum" submenu

- For detailed information on the parameter descriptions for the **Petroleum** application package, refer to the Special Documentation for the device → 7

Navigation  Expert → Application → Petroleum

► Petroleum

3.12 "Diagnostics" submenu

Navigation  Expert → Diagnostics

► Diagnostics

Actual diagnos. (0691)

Prev.diagnostics (0690)

Time fr. restart (0653)

Operating time (0652)

► Diagnostic list

► Event logbook

► Device info

► Main elec.+I/O1

► Sens. electronic

► I/O module 1

► I/O module 2

► Display module

► Min/max val.

► Data logging

► Heartbeat

► Simulation

→  226

→  226

→  227

→  227

→  228

→  232

→  234

→  238

→  239

→  240

→  240

→  242

→  243

→  254

→  263

→  263

Actual diagnos.

Navigation	 Expert → Diagnostics → Actual diagnos. (0691)
Prerequisite	A diagnostic event has occurred.
Description	Displays the current diagnostic message. If two or more messages occur simultaneously, the message with the highest priority is shown on the display.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.
Additional information	<i>Display</i>  Additional pending diagnostic messages can be viewed in the Diagnostic list submenu (→  228).  Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the  key. <i>Example</i> For the display format:  F271 Main electronics

Timestamp

Navigation	 Expert → Diagnostics → Timestamp
Description	Displays the operating time when the current diagnostic message occurred.
User interface	Days (d), hours (h), minutes (m) and seconds (s)
Additional information	<i>Display</i>  The diagnostic message can be viewed via the Actual diagnos. parameter (→  226). <i>Example</i> For the display format: 24d12h13m00s

Prev.diagnostics

Navigation	 Expert → Diagnostics → Prev.diagnostics (0690)
Prerequisite	Two diagnostic events have already occurred.
Description	Displays the diagnostic message that occurred before the current message.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.

Additional information*Display*

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

Example

For the display format:

⊗F271 Main electronics

Timestamp

Navigation

Expert → Diagnostics → Timestamp

Description

Displays the operating time when the last diagnostic message before the current message occurred.

User interface

Days (d), hours (h), minutes (m) and seconds (s)

Additional information*Display*

The diagnostic message can be viewed via the **Prev.diagnostics** parameter (→ 226).

Example

For the display format:

24d12h13m00s

Time fr. restart

Navigation

Expert → Diagnostics → Time fr. restart (0653)

Description

Use this function to display the time the device has been in operation since the last device restart.

User interface

Days (d), hours (h), minutes (m) and seconds (s)

Operating time

Navigation

Expert → Diagnostics → Operating time (0652)

Description

Use this function to display the length of time the device has been in operation.

User interface

Days (d), hours (h), minutes (m) and seconds (s)

Additional information

User interface

The maximum number of days is 9999, which is equivalent to 27 years.

3.12.1 "Diagnostic list" submenu

Navigation

 Expert → Diagnostics → Diagnostic list

► Diagnostic list

Diagnostics 1 (0692)

→  228

Diagnostics 2 (0693)

→  229

Diagnostics 3 (0694)

→  230

Diagnostics 4 (0695)

→  230

Diagnostics 5 (0696)

→  231

Diagnostics 1

Navigation

 Expert → Diagnostics → Diagnostic list → Diagnostics 1 (0692)

Description

Displays the current diagnostics message with the highest priority.

User interface

Symbol for diagnostic behavior, diagnostic code and short message.

Additional information

Display

 Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the  key.

Examples

For the display format:

-  F271 Main electronics
-  F276 I/O module

Timestamp

Navigation

 Expert → Diagnostics → Diagnostic list → Timestamp

Description

Displays the operating time when the diagnostic message with the highest priority occurred.

User interface Days (d), hours (h), minutes (m) and seconds (s)

Additional information *Display*



The diagnostic message can be viewed via the **Diagnostics 1** parameter (→ 228).

Example

For the display format:
24d12h13m00s

Diagnostics 2

Navigation Expert → Diagnostics → Diagnostic list → Diagnostics 2 (0693)

Description Displays the current diagnostics message with the second-highest priority.

User interface Symbol for diagnostic behavior, diagnostic code and short message.

Additional information *Display*



Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

Examples

For the display format:

- F271 Main electronics
- F276 I/O module

Timestamp

Navigation Expert → Diagnostics → Diagnostic list → Timestamp

Description Displays the operating time when the diagnostic message with the second-highest priority occurred.

User interface Days (d), hours (h), minutes (m) and seconds (s)

Additional information *Display*



The diagnostic message can be viewed via the **Diagnostics 2** parameter (→ 229).

Example

For the display format:
24d12h13m00s

Diagnostics 3

Navigation	 Expert → Diagnostics → Diagnostic list → Diagnostics 3 (0694)
Description	Displays the current diagnostics message with the third-highest priority.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.
Additional information	<i>Display</i>  Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the  key. <i>Examples</i> For the display format: ■  F271 Main electronics ■  F276 I/O module

Timestamp

Navigation	 Expert → Diagnostics → Diagnostic list → Timestamp
Description	Displays the operating time when the diagnostic message with the third-highest priority occurred.
User interface	Days (d), hours (h), minutes (m) and seconds (s)
Additional information	<i>Display</i>  The diagnostic message can be viewed via the Diagnostics 3 parameter (→  230). <i>Example</i> For the display format: 24d12h13m00s

Diagnostics 4

Navigation	 Expert → Diagnostics → Diagnostic list → Diagnostics 4 (0695)
Description	Displays the current diagnostics message with the fourth-highest priority.
User interface	Symbol for diagnostic behavior, diagnostic code and short message.

Additional information*Display*

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

Examples

For the display format:

- F271 Main electronics
- F276 I/O module

Timestamp

Navigation

Expert → Diagnostics → Diagnostic list → Timestamp

Description

Displays the operating time when the diagnostic message with the fourth-highest priority occurred.

User interface

Days (d), hours (h), minutes (m) and seconds (s)

Additional information*Display*

The diagnostic message can be viewed via the **Diagnostics 4** parameter (→ 230).

Example

For the display format:

24d12h13m00s

Diagnostics 5

Navigation

Expert → Diagnostics → Diagnostic list → Diagnostics 5 (0696)

Description

Displays the current diagnostics message with the fifth-highest priority.

User interface

Symbol for diagnostic behavior, diagnostic code and short message.

Additional information*Display*

Via the local display: the time stamp and corrective measures referring to the cause of the diagnostic message can be accessed via the key.

Examples

For the display format:

- F271 Main electronics
- F276 I/O module

Timestamp

Navigation	 Expert → Diagnostics → Diagnostic list → Timestamp
Description	Displays the operating time when the diagnostic message with the fifth-highest priority occurred.
User interface	Days (d), hours (h), minutes (m) and seconds (s)
Additional information	Display  The diagnostic message can be viewed via the Diagnostics 5 parameter (→  231). Example For the display format: 24d12h13m00s

3.12.2 "Event logbook" submenu

Navigation  Expert → Diagnostics → Event logbook

► Event logbook

Filter options (0705)

→  232

► Event list

→  233

Filter options

Navigation	 Expert → Diagnostics → Event logbook → Filter options (0705)
Description	Use this function to select the category whose event messages are displayed in the event list of the local display.
Selection	■ All ■ Failure (F) ■ Funct. check (C) ■ Out of spec. (S) ■ Mainten. req.(M) ■ Information (I)
Factory setting	All

Additional information*Description*

The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107:

- F = Failure
- C = Function Check
- S = Out of Specification
- M = Maintenance Required

Filter options**Navigation**

Expert → Diagnostics → Event logbook → Filter options

Description

Use this function to select the category whose event messages are displayed in the event list of the operating tool.

Selection

- All
- Failure (F)
- Funct. check (C)
- Out of spec. (S)
- Mainten. req.(M)
- Information (I)

Factory setting

All

Additional information*Description*

The status signals are categorized in accordance with VDI/VDE 2650 and NAMUR Recommendation NE 107:

- F = Failure
- C = Function Check
- S = Out of Specification
- M = Maintenance Required

"Event list" submenu

The **Event list** submenu is only displayed if operating via the local display.

If operating via the FieldCare operating tool, the event list can be read out with a separate FieldCare module.

If operating via the Web browser, the event messages can be found directly in the **Event logbook** submenu.

Navigation

Expert → Diagnostics → Event logbook → Event list

► Event list

Event list

→ 234

Event list

Navigation	 Expert → Diagnostics → Event logbook → Event list
Description	Displays the history of event messages of the category selected in the Filter options parameter (→  232).
User interface	■ For a "Category I" event message Information event, short message, symbol for event recording and operating time when error occurred ■ For a "Category F, C, S, M" event message (status signal) Diagnostics code, short message, symbol for event recording and operating time when error occurred
Additional information	<i>Description</i> A maximum of 20 event messages are displayed in chronological order. If the Extended HistoROM application package (order option) is enabled in the device, the event list can contain up to 100 entries . The following symbols indicate whether an event has occurred or has ended: ■ : Occurrence of the event ■ : End of the event <i>Examples</i> For the display format: ■ I1091 Configuration modified  24d12h13m00s ■  F271 Main electronics  01d04h12min30s <i>HistoROM</i> A HistoROM is a "non-volatile" device memory in the form of an EEPROM.

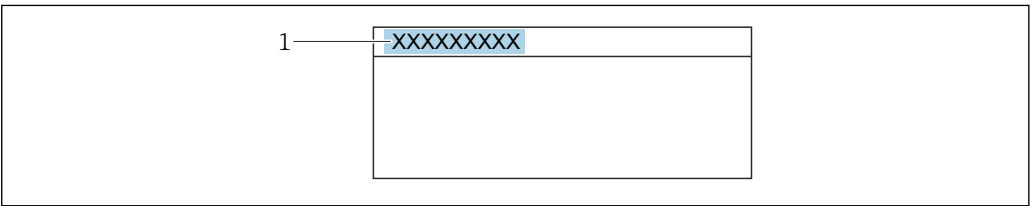
3.12.3 "Device info" submenu

Navigation	 Expert → Diagnostics → Device info
► Device info Device tag (0011) Serial number (0009) Firmware version (0010) Device name (0020) Order code (0008) →  235 →  235 →  236 →  236 →  236	

Ext. order cd. 1 (0023)	→ 237
Ext. order cd. 2 (0021)	→ 237
Ext. order cd. 3 (0022)	→ 237
ENP version (0012)	→ 237

Device tag

Navigation	Expert → Diagnostics → Device info → Device tag (0011)
Description	Displays a unique name for the measuring point so it can be identified quickly within the plant. The name is displayed in the header.
User interface	Max. 32 characters, such as letters, numbers or special characters (e.g. @, %, /).
Factory setting	Promass 500 PA
Additional information	Display



A0029422

1 Position of the header text on the display

The number of characters displayed depends on the characters used.

Serial number

Navigation	Expert → Diagnostics → Device info → Serial number (0009)
Description	Displays the serial number of the measuring device.  The number can be found on the nameplate of the sensor and transmitter.
User interface	Max. 11-digit character string comprising letters and numbers.
Additional information	Description  Uses of the serial number ■ To identify the measuring device quickly, e.g. when contacting Endress+Hauser. ■ To obtain specific information on the measuring device using the Device Viewer: www.endress.com/deviceviewer

Firmware version	
Navigation	 Expert → Diagnostics → Device info → Firmware version (0010)
Description	Displays the device firmware version installed.
User interface	Character string in the format xx.yy.zz
Additional information	<i>Display</i>  The Firmware version is also located: ▪ On the title page of the Operating instructions ▪ On the transmitter nameplate
Device name	
Navigation	 Expert → Diagnostics → Device info → Device name (0020)
Description	Displays the name of the transmitter. It can also be found on the nameplate of the transmitter.
User interface	Promass 300/500
Order code	
Navigation	 Expert → Diagnostics → Device info → Order code (0008)
Description	Displays the device order code.
User interface	Character string composed of letters, numbers and certain punctuation marks (e.g. /).
Additional information	<i>Description</i>  The order code can be found on the nameplate of the sensor and transmitter in the "Order code" field. The order code is generated from the extended order code through a process of reversible transformation. The extended order code indicates the attributes for all the device features in the product structure. The device features are not directly readable from the order code.  Uses of the order code ▪ To order an identical spare device. ▪ To identify the device quickly and easily, e.g. when contacting Endress+Hauser.

Ext. order cd. 1		
Navigation	  Expert → Diagnostics → Device info → Ext. order cd. 1 (0023)	
Description	Displays the first part of the extended order code. On account of length restrictions, the extended order code is split into a maximum of 3 parameters.	
User interface	Character string	
Additional information	<i>Description</i> The extended order code indicates the version of all the features of the product structure for the measuring device and thus uniquely identifies the measuring device.  The extended order code can also be found on the nameplate of the sensor and transmitter in the "Ext. ord. cd." field.	
Ext. order cd. 2		
Navigation	  Expert → Diagnostics → Device info → Ext. order cd. 2 (0021)	
Description	Displays the second part of the extended order code.	
User interface	Character string	
Additional information	For additional information, see Ext. order cd. 1 parameter (→  237)	
Ext. order cd. 3		
Navigation	  Expert → Diagnostics → Device info → Ext. order cd. 3 (0022)	
Description	Displays the third part of the extended order code.	
User interface	Character string	
Additional information	For additional information, see Ext. order cd. 1 parameter (→  237)	
ENP version		
Navigation	  Expert → Diagnostics → Device info → ENP version (0012)	
Description	Displays the version of the electronic nameplate.	
User interface	Character string	

Factory setting2.02.00

Additional informationDescription
This electronic nameplate stores a data record for device identification that includes more data than the nameplates attached to the outside of the device.

3.12.4 "Main elec.+I/O1" submenu

Navigation  Expert → Diagnostics → Main elec.+I/O1

► Main elec.+I/O1

Software rev.

Build no. softw.

Bootloader rev.

→  238

→  238

→  238

Software rev.

Navigation  Expert → Diagnostics → Main elec.+I/O1 → Software rev. (0072)

DescriptionUse this function to display the software revision of the module.

User interfacePositive integer

Build no. softw.

Navigation  Expert → Diagnostics → Main elec.+I/O1 → Build no. softw. (0079)

DescriptionUse this function to display the software build number of the module.

User interfacePositive integer

Bootloader rev.

Navigation  Expert → Diagnostics → Main elec.+I/O1 → Bootloader rev. (0073)

DescriptionUse this function to display the bootloader revision of the software.

User interface Positive integer

3.12.5 "Sens. electronic" submenu

Navigation  Expert → Diagnostics → Sens. electronic

► Sens. electronic

Software rev. (0072)

Build no. softw. (0079)

Bootloader rev. (0073)

→  239

→  239

→  239

Software rev.

Navigation  Expert → Diagnostics → Sens. electronic → Software rev. (0072)

Description Use this function to display the software revision of the module.

User interface Positive integer

Build no. softw.

Navigation  Expert → Diagnostics → Sens. electronic → Build no. softw. (0079)

Description Use this function to display the software build number of the module.

User interface Positive integer

Bootloader rev.

Navigation  Expert → Diagnostics → Sens. electronic → Bootloader rev. (0073)

Description Use this function to display the bootloader revision of the software.

User interface Positive integer

3.12.6 "I/O module 1" submenu

Navigation  Expert → Diagnostics → I/O module 1

► I/O module

Software rev. (0072) →  240

I/O 1 terminals

Navigation	 Expert → Diagnostics → I/O module 1 → I/O 1 terminals (3902–1)
Description	Displays the terminal numbers used by the I/O module.
User interface	■ Not used ■ 26-27 (I/O 1) ■ 24-25 (I/O 2)

Software rev.

Navigation	 Expert → Diagnostics → I/O module → Software rev. (0072)
Description	Use this function to display the software revision of the module.
User interface	Positive integer

3.12.7 "I/O module 2" submenu

Navigation  Expert → Diagnostics → I/O module 2

► I/O module 2

I/O 2 terminals →  241

Software rev. →  241

Build no. softw. →  241

Bootloader rev. →  241

I/O 2 terminals

Navigation	 Expert → Diagnostics → I/O module 2 → I/O 2 terminals (3902)
Description	Displays the terminal numbers used by the I/O module.
User interface	■ Not used ■ 26-27 (I/O 1) ■ 24-25 (I/O 2)

Software rev.

Navigation	 Expert → Diagnostics → I/O module → Software rev. (0072)
Description	Use this function to display the software revision of the module.
User interface	Positive integer

Build no. softw.

Navigation	 Expert → Diagnostics → I/O module 2 → Build no. softw. (0079)
Description	Use this function to display the software build number of the module.
User interface	Positive integer

Bootloader rev.

Navigation	 Expert → Diagnostics → I/O module 2 → Bootloader rev. (0073)
Description	Use this function to display the bootloader revision of the software.
User interface	Positive integer

3.12.8 "Display module" submenu

Navigation  Expert → Diagnostics → Display module

► Display module

Software rev. (0072)

Build no. softw. (0079)

Bootloader rev. (0073)

→  242

→  242

→  242

Software rev.

Navigation  Expert → Diagnostics → Display module → Software rev. (0072)

Description Use this function to display the software revision of the module.

User interface Positive integer

Build no. softw.

Navigation  Expert → Diagnostics → Display module → Build no. softw. (0079)

Description Use this function to display the software build number of the module.

User interface Positive integer

Bootloader rev.

Navigation  Expert → Diagnostics → Display module → Bootloader rev. (0073)

Description Use this function to display the bootloader revision of the software.

User interface Positive integer

3.12.9 "Min/max val." submenu

Navigation  Expert → Diagnostics → Min/max val.

▶ Min/max val.		
Reset min/max (6151)	→ 	243
▶ Main elect.temp.	→ 	244
▶ Sensor elec.temp	→ 	245
▶ Medium temp.	→ 	246
▶ Carr. pipe temp.	→ 	246
▶ Oscil. frequency	→ 	248
▶ Tors.oscil.freq.	→ 	248
▶ Oscil. amplitude	→ 	249
▶ Tor. osc. amp.	→ 	250
▶ Oscil. damping	→ 	251
▶ Tors.oscil.damp.	→ 	251
▶ Signal asymmetry	→ 	252
▶ Tors.sig.asymm.	→ 	253

Reset min/max	
---------------	---

Navigation	 Expert → Diagnostics → Min/max val. → Reset min/max (6151)
Description	Use this function to select measured variables whose minimum, maximum and average measured values are to be reset.
Selection	■ Cancel ■ Oscil. amplitude * ■ Osc. ampl. 1 * ■ Oscil. damping ■ Tors.oscil.damp. * ■ Oscil. frequency

* Visibility depends on order options or device settings

- Tors.oscil.freq.*
- Signal asymmetry*
- Tors.sig.asymm.*

Factory setting

Cancel

"Main electronic temperature" submenu

Navigation  Expert → Diagnostics → Min/max val. → Main elect.temp.

► Main elect.temp.

Minimum value (0688)

→  244

Maximum value (0665)

→  244

Minimum value

Navigation	 Expert → Diagnostics → Min/max val. → Main elect.temp. → Minimum value (0688)
Description	Displays the lowest previously measured temperature value of the electronics module in the transmitter.
User interface	Signed floating-point number
Additional information	Dependency  The unit is taken from the Temperature unit parameter (→  66)

Maximum value

Navigation	 Expert → Diagnostics → Min/max val. → Main elect.temp. → Maximum value (0665)
Description	Displays the highest previously measured temperature value of the electronics module in the transmitter.
User interface	Signed floating-point number

* Visibility depends on order options or device settings

Additional information

Dependency

 The unit is taken from the **Temperature unit** parameter (→  66)

"Sensor electronic temperature (ISEM)" submenu

Navigation   Expert → Diagnostics → Min/max val. → Sensor elec.temp

► Sensor elec.temp

Minimum value (6052)

→  245

Maximum value (6051)

→  245

Maximum value

Navigation	  Expert → Diagnostics → Min/max val. → Sensor elec.temp → Maximum value (6051)
Description	Displays the highest previously measured temperature value of the electronics module in the sensor connection housing.
User interface	Signed floating-point number
Additional information	Dependency  The unit is taken from the Temperature unit parameter (→  66)

Minimum value

Navigation	  Expert → Diagnostics → Min/max val. → Sensor elec.temp → Minimum value (6052)
Description	Displays the lowest previously measured temperature value of the electronics module in the sensor connection housing.
User interface	Signed floating-point number
Additional information	Dependency  The unit is taken from the Temperature unit parameter (→  66)

"Medium temp." submenu

Navigation  Expert → Diagnostics → Min/max val. → Medium temp.

► Medium temp.

Minimum value (6109)

→  246

Maximum value (6108)

→  246

Minimum value

Navigation	 Expert → Diagnostics → Min/max val. → Medium temp. → Minimum value (6109)
Description	Displays the lowest previously measured medium temperature value.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Temperature unit parameter (→  66)

Maximum value

Navigation	 Expert → Diagnostics → Min/max val. → Medium temp. → Maximum value (6108)
Description	Displays the highest previously measured medium temperature value.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Temperature unit parameter (→  66)

"Carr. pipe temp." submenu

Navigation  Expert → Diagnostics → Min/max val. → Carr. pipe temp.

► Carr. pipe temp.

Minimum value (6030)

→  247

Maximum value (6029)

→  247

Minimum value

Navigation	 Expert → Diagnostics → Min/max val. → Carr. pipe temp. → Minimum value (6030)
Prerequisite	 Only available for: ■ Promass A ■ Promass F ■ Promass H ■ Promass I ■ Promass O ■ Promass P ■ PromassQ ■ Promass S ■ Promass X For the following order code "Application package", option EB "Heartbeat Verification + Monitoring"
Description	Displays the lowest previously measured temperature value of the carrier pipe.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Temperature unit parameter (→  66)

Maximum value

Navigation	 Expert → Diagnostics → Min/max val. → Carr. pipe temp. → Maximum value (6029)
Prerequisite	 Only available for: ■ Promass A ■ Promass F ■ Promass H ■ Promass I ■ Promass O ■ Promass P ■ PromassQ ■ Promass S ■ Promass X For the following order code "Application package", option EB "Heartbeat Verification + Monitoring"
Description	Displays the highest previously measured temperature value of the carrier pipe.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Temperature unit parameter (→  66)

"Oscil. frequency" submenu

Navigation  Expert → Diagnostics → Min/max val. → Oscil. frequency

► Oscil. frequency

Minimum value (6071)

→  248

Maximum value (6070)

→  248

Minimum value

Navigation	 Expert → Diagnostics → Min/max val. → Oscil. frequency → Minimum value (6071)
Description	Displays the lowest previously measured oscillation frequency.
User interface	Signed floating-point number

Maximum value

Navigation	 Expert → Diagnostics → Min/max val. → Oscil. frequency → Maximum value (6070)
Description	Displays the highest previously measured oscillation frequency.
User interface	Signed floating-point number

"Tors.oscil.freq." submenu

Navigation  Expert → Diagnostics → Min/max val. → Tors.oscil.freq.

► Tors.oscil.freq.

Minimum value (6069)

→  249

Maximum value (6068)

→  249

Minimum value	
Navigation	 Expert → Diagnostics → Min/max val. → Tors.oscil.freq. → Minimum value (6069)
Prerequisite	 Only available for Promass I. For the following order code: "Application package", option EB "Heartbeat Verification + Monitoring"
Description	Displays the lowest previously measured torsion oscillation frequency.
User interface	Signed floating-point number

Navigation	 Expert → Diagnostics → Min/max val. → Tors.oscil.freq. → Maximum value (6068)
Prerequisite	 Only available for Promass I. For the following order code: "Application package", option EB "Heartbeat Verification + Monitoring"
Description	Displays the highest previously measured torsion oscillation frequency.
User interface	Signed floating-point number

"Oscil. amplitude" submenu

Navigation

 Expert → Diagnostics → Min/max val. → Oscil. amplitude

► Oscil. amplitude

Minimum value (6010)

Maximum value (6009)

→  249

→  250

Minimum value	
Navigation	 Expert → Diagnostics → Min/max val. → Oscil. amplitude → Minimum value (6010)
Description	Displays the lowest previously measured oscillation amplitude.
User interface	Signed floating-point number

Maximum value

Navigation	  Expert → Diagnostics → Min/max val. → Oscil. amplitude → Maximum value (6009)
Description	Displays the highest previously measured oscillation amplitude.
User interface	Signed floating-point number

"Tor. osc. amp." submenu

Navigation   Expert → Diagnostics → Min/max val. → Tor. osc. amp.

► Tor. osc. amp.

Minimum value (6008)

→  250

Maximum value (6007)

→  250

Minimum value

Navigation	  Expert → Diagnostics → Min/max val. → Tor. osc. amp. → Minimum value (6008)
Prerequisite	 Only available for Promass I. For the following order code: "Application package", option EB "Heartbeat Verification + Monitoring"
Description	Displays the lowest previously measured torsion oscillation amplitude.
User interface	Signed floating-point number

Maximum value

Navigation	  Expert → Diagnostics → Min/max val. → Tor. osc. amp. → Maximum value (6007)
Prerequisite	 Only available for Promass I. For the following order code: "Application package", option EB "Heartbeat Verification + Monitoring"
Description	Displays the highest previously measured torsion oscillation amplitude.

User interface Signed floating-point number

"Oscil. damping" submenu

Navigation

  Expert → Diagnostics → Min/max val. → Oscil. damping

► Oscil. damping

Minimum value (6122)

→  251

Maximum value (6121)

→  251

Minimum value

Navigation   Expert → Diagnostics → Min/max val. → Oscil. damping → Minimum value (6122)

Description Displays the lowest previously measured oscillation damping.

User interface Signed floating-point number

Maximum value

Navigation   Expert → Diagnostics → Min/max val. → Oscil. damping → Maximum value (6121)

Description Displays the highest previously measured oscillation damping.

User interface Signed floating-point number

"Tors.oscil.damp." submenu

Navigation

  Expert → Diagnostics → Min/max val. → Tors.oscil.damp.

► Tors.oscil.damp.

Minimum value (6120)

→  252

Maximum value (6119)

→  252

Minimum value

Navigation	 Expert → Diagnostics → Min/max val. → Tors.oscil.damp. → Minimum value (6120)
Prerequisite	 Only available for Promass I. For the following order code: "Application package", option EB "Heartbeat Verification + Monitoring"
Description	Displays the lowest previously measured torsion oscillation damping.
User interface	Signed floating-point number

Maximum value

Navigation	 Expert → Diagnostics → Min/max val. → Tors.oscil.damp. → Maximum value (6119)
Prerequisite	 Only available for Promass I. For the following order code: "Application package", option EB "Heartbeat Verification + Monitoring"
Description	Displays the highest previously measured torsion oscillation damping.
User interface	Signed floating-point number

"Signal asymmetry" submenu

Navigation  Expert → Diagnostics → Min/max val. → Signal asymmetry

► Signal asymmetry

Minimum value (6015)

→  252

Maximum value (6014)

→  253

Minimum value

Navigation	 Expert → Diagnostics → Min/max val. → Signal asymmetry → Minimum value (6015)
Description	Displays the lowest previously measured signal asymmetry.

User interface Signed floating-point number

Maximum value

Navigation  Expert → Diagnostics → Min/max val. → Signal asymmetry → Maximum value (6014)

Description Displays the highest previously measured signal asymmetry.

User interface Signed floating-point number

"Torsion signal asymmetry" submenu

Navigation  Expert → Diagnostics → Min/max val. → Tors.sig.asymm.

► Tors.sig.asymm.

Minimum value (6284)

→  253

Maximum value (6283)

→  253

Minimum value

Navigation  Expert → Diagnostics → Min/max val. → Tors.sig.asymm. → Minimum value (6284)

Prerequisite  Only available for Promass I.
For the following order code:
"Application package", option **EB** "Heartbeat Verification + Monitoring"

Description Displays the lowest previously measured torsion signal asymmetry.

User interface Signed floating-point number

Maximum value

Navigation  Expert → Diagnostics → Min/max val. → Tors.sig.asymm. → Maximum value (6283)

Prerequisite  Only available for Promass I.

	For the following order code: "Application package", option EB "Heartbeat Verification + Monitoring"
Description	Displays the highest previously measured torsion signal asymmetry.
User interface	Signed floating-point number

3.12.10 "Data logging" submenu

Navigation  Expert → Diagnostics → Data logging

► Data logging	
Assign chan. 1	→  255
Assign chan. 2	→  256
Assign chan. 3	→  257
Assign chan. 4	→  257
Logging interval	→  257
Clear logging	→  258
Data logging	→  258
Logging delay	→  259
Data log.control	→  259
Data log. status	→  260
Logging duration	→  260
► Displ.channel 1	→  260
► Displ.channel 2	→  262
► Displ.channel 3	→  262
► Displ.channel 4	→  263

**Assign chan. 1****Navigation** Expert → Diagnostics → Data logging → Assign chan. 1 (0851)**Prerequisite**The **Extended HistoROM** application package is available.The software options currently enabled are displayed in the **SW option overv.** parameter (→  45).**Description**

Use this function to select a process variable for the data logging channel.

Selection

- Off
- Mass flow
- Volume flow
- Correct.vol.flow *
- Target mass flow *
- Carrier mass fl. *
- Target vol. flow *
- Carrier vol. fl. *
- Targ.corr.vol.fl *
- Carr.corr.vol.fl *
- Density
- Ref.density *
- Ref.dens.altern. *
- GSV flow *
- GSVa *
- NSV flow *
- NSVa *
- S&W volume flow *
- Water cut *
- Oil density *
- Water density *
- Oil mass flow *
- Water mass flow *
- Oil volume flow *
- Water vol. flow *
- Oil corr.vol.fl. *
- Water corr.v.fl. *
- Concentration *
- Dynam. viscosity *
- Kinematic visc. *
- TempCompDynVisc *
- TempCompKinVisc *
- Temperature
- Carr. pipe temp. *
- Electronic temp.
- Osc. freq. 0
- Osc. freq. 1 *
- Freq. fluct. 0 *
- Freq. fluct. 1 *
- Oscil. amplitude *
- Osc. ampl. 1 *
- Freq. fluct. 0 *
- Osc. damping 0 *
- Osc. damping 1 *

* Visibility depends on order options or device settings

- Osc.damp.fluct 0 *
- Osc.damp.fluct 1 *
- Signal asymmetry *
- Exc. current 0 *
- Exc. current 1 *
- HBSI *
- Curr.output 1 *
- Pressure

Factory setting Off

Additional information *Description*

A total of 1000 measured values can be logged. This means:

- 1000 data points if 1 logging channel is used
- 500 data points if 2 logging channels are used
- 333 data points if 3 logging channels are used
- 250 data points if 4 logging channels are used

Once the maximum number of data points is reached, the oldest data points in the data log are cyclically overwritten in such a way that the last 1000, 500, 333 or 250 measured values are always in the log (ring memory principle).

 The log contents are cleared if the option selected is changed.

Selection

 Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry: Assign freq.** parameter (→  123)

Assign chan. 2

Navigation  Expert → Diagnostics → Data logging → Assign chan. 2 (0852)

Prerequisite The **Extended HistoROM** application package is available.

 The software options currently enabled are displayed in the **SW option overv.** parameter (→  45).

Description Options for the assignment of a process variable to the data logging channel.

Selection Picklist, see **Assign channel 1** parameter (→  255)

Factory setting Off

* Visibility depends on order options or device settings

Assign chan. 3



Navigation	Expert → Diagnostics → Data logging → Assign chan. 3 (0853)
Prerequisite	The Extended HistoROM application package is available. The software options currently enabled are displayed in the SW option overv. parameter (→ 45).
Description	Options for the assignment of a process variable to the data logging channel.
Selection	Picklist, see Assign channel 1 parameter (→ 255)
Factory setting	Off

Assign chan. 4



Navigation	Expert → Diagnostics → Data logging → Assign chan. 4 (0854)
Prerequisite	The Extended HistoROM application package is available. The software options currently enabled are displayed in the SW option overv. parameter (→ 45).
Description	Options for the assignment of a process variable to the data logging channel.
Selection	Picklist, see Assign channel 1 parameter (→ 255)
Factory setting	Off

Logging interval



Navigation	Expert → Diagnostics → Data logging → Logging interval (0856)
Prerequisite	The Extended HistoROM application package is available. The software options currently enabled are displayed in the SW option overv. parameter (→ 45).
Description	Use this function to enter the logging interval $T_{\log}$ for data logging.
User entry	0.1 to 3 600.0 s
Factory setting	1.0 s

Additional information	<i>Description</i> This defines the interval between the individual data points in the data log, and thus the maximum loggable process time $T_{\log}$: ■ If 1 logging channel is used: $T_{\log} = 1000 \times t_{\log}$ ■ If 2 logging channels are used: $T_{\log} = 500 \times t_{\log}$ ■ If 3 logging channels are used: $T_{\log} = 333 \times t_{\log}$ ■ If 4 logging channels are used: $T_{\log} = 250 \times t_{\log}$ Once this time elapses, the oldest data points in the data log are cyclically overwritten such that a time of $T_{\log}$ always remains in the memory (ring memory principle).  The log contents are cleared if the length of the logging interval is changed. <i>Example</i> If 1 logging channel is used: ■ $T_{\log} = 1000 \times 1 \text{ s} = 1\,000 \text{ s} \approx 15 \text{ min}$ ■ $T_{\log} = 1000 \times 10 \text{ s} = 10\,000 \text{ s} \approx 3 \text{ h}$ ■ $T_{\log} = 1000 \times 80 \text{ s} = 80\,000 \text{ s} \approx 1 \text{ d}$ ■ $T_{\log} = 1000 \times 3\,600 \text{ s} = 3\,600\,000 \text{ s} \approx 41 \text{ d}$
-------------------------------	---

Clear logging

Navigation	  Expert → Diagnostics → Data logging → Clear logging (0855)
Prerequisite	The Extended HistoROM application package is available.  The software options currently enabled are displayed in the SW option overv. parameter (→  45).
Description	Use this function to clear the entire logging data.
Selection	■ Cancel ■ Clear data
Factory setting	Cancel
Additional information	<i>Selection</i> ■ Cancel The data is not cleared. All the data is retained. ■ Clear data The logging data is cleared. The logging process starts from the beginning.

Data logging

Navigation	  Expert → Diagnostics → Data logging → Data logging (0860)
Description	Use this function to select the data logging method.
Selection	■ Overwriting ■ Not overwriting

Factory setting Overwriting

Additional information *Selection*

- Overwriting
The device memory applies the FIFO principle.
- Not overwriting
Data logging is canceled if the measured value memory is full (single shot).

Logging delay

Navigation   Expert → Diagnostics → Data logging → Logging delay (0859)

Prerequisite In the **Data logging** parameter (→  258), the **Not overwriting** option is selected.

Description Use this function to enter the time delay for measured value logging.

User entry 0 to 999 h

Factory setting 0 h

Additional information *Description*

Once measured value logging has been started with the **Data log.control** parameter (→  259), the device does not save any data for the duration of the time delay entered.

Data log.control

Navigation   Expert → Diagnostics → Data logging → Data log.control (0857)

Prerequisite In the **Data logging** parameter (→  258), the **Not overwriting** option is selected.

Description Use this function to start and stop measured value logging.

Selection

- None
- Delete + start
- Stop

Factory setting None

Additional information *Selection*

- None
Initial measured value logging status.
- Delete + start
All the measured values recorded for all the channels are deleted and measured value logging starts again.
- Stop
Measured value logging is stopped.

Data log. status

Navigation	 Expert → Diagnostics → Data logging → Data log. status (0858)
Prerequisite	In the Data logging parameter (→  258), the Not overwriting option is selected.
Description	Displays the measured value logging status.
User interface	■ Done ■ Delay active ■ Active ■ Stopped
Factory setting	Done
Additional information	<i>Selection</i> ■ Done Measured value logging has been performed and completed successfully. ■ Delay active Measured value logging has been started but the logging interval has not yet elapsed. ■ Active The logging interval has elapsed and measured value logging is active. ■ Stopped Measured value logging is stopped.

Logging duration

Navigation	 Expert → Diagnostics → Data logging → Logging duration (0861)
Prerequisite	In the Data logging parameter (→  258), the Not overwriting option is selected.
Description	Displays the total logging duration.
User interface	Positive floating-point number
Factory setting	0 s

"Displ.channel 1" submenu

Navigation  Expert → Diagnostics → Data logging → Displ.channel 1

► Displ.channel 1

Display channel 1 →  261

Display channel 1

Navigation

 Expert → Diagnostics → Data logging → Displ.channel 1

Prerequisite

The **Extended HistoROM** application package is available.

 The software options currently enabled are displayed in the **SW option overv.** parameter (→  45).

One of the following options is selected in the **Assign chan. 1** parameter (→  255):

- Mass flow
- Volume flow
- Correct.vol.flow
- Target mass flow *
- Carrier mass fl. *
- Density
- Ref.density
- Concentration *
- Dynam. viscosity *
- Kinematic visc. *
- TempCompDynVisc *
- TempCompKinVisc *
- Carr. pipe temp. *
- Electronic temp.
- Curr.output 1
- Osc. freq. 0
- Osc. freq. 1 *
- Freq. fluct. 0
- Freq. fluct. 1 *
- Oscil. amplitude *
- Osc. ampl. 1 *
- Osc. damping 0
- Osc. damping 1 *
- Osc.damp.fluct 0
- Osc.damp.fluct 1 *
- Signal asymmetry
- Exc. current 0
- Exc. current 1 *

Description

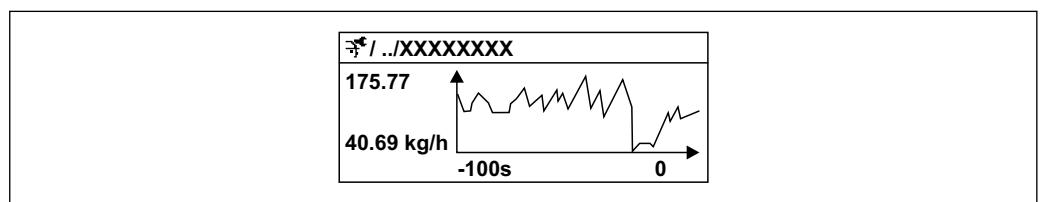
Displays the measured value trend for the logging channel in the form of a chart.

Additional information

Prerequisite

 Detailed description of the options **Oscil. frequency**, **Oscil. amplitude**, **Oscil. damping** and **Signal asymmetry**: **Assign freq.** parameter (→  123)

Description



A0016357

 9 Chart of a measured value trend

* Visibility depends on order options or device settings

- x-axis: depending on the number of channels selected displays 250 to 1000 measured values of a process variable.
- y-axis: displays the approximate measured value span and constantly adapts this to the ongoing measurement.

"Displ.channel 2" submenu

Navigation  Expert → Diagnostics → Data logging → Displ.channel 2

► Displ.channel 2

Display channel 2 →  262

Display channel 2

Navigation	 Expert → Diagnostics → Data logging → Displ.channel 2
Prerequisite	A process variable is defined in the Assign chan. 2 parameter.
Description	See the Display channel 1 parameter →  261

"Displ.channel 3" submenu

Navigation  Expert → Diagnostics → Data logging → Displ.channel 3

► Displ.channel 3

Display channel 3 →  262

Display channel 3

Navigation	 Expert → Diagnostics → Data logging → Displ.channel 3
Prerequisite	A process variable is defined in the Assign chan. 3 parameter.
Description	See the Display channel 1 parameter →  261

"Displ.channel 4" submenu

Navigation

 Expert → Diagnostics → Data logging → Displ.channel 4

► Displ.channel 4

Display channel 4 →  263

Display channel 4

Navigation	 Expert → Diagnostics → Data logging → Displ.channel 4
Prerequisite	A process variable is defined in the Assign chan. 4 parameter.
Description	See the Display channel 1 parameter →  261

3.12.11 "Heartbeat" submenu

 For detailed information on the parameter descriptions for the **Heartbeat Verification+Monitoring** application package, refer to the Special Documentation for the device →  7

Navigation   Expert → Diagnostics → Heartbeat

► Heartbeat

► Base settings

► Perform.verific.

► Verific. results

► HBT Monitoring

► Monitor. results

3.12.12 "Simulation" submenu

Navigation   Expert → Diagnostics → Simulation

► Simulation

Assign proc.var. (1810) →  264

Proc. var. value (1811)	→  265
Status inp. sim. (1355)	→  266
Signal level (1356)	→  266
Curr.inp 1 to n sim. (1608-1 to n)	→  267
Value curr.inp 1 to n (1609-1 to n)	→  267
Curr.out. 1 to n sim. (0354-1 to n)	→  267
Value curr.out 1 to n (0355-1 to n)	→  268
FreqOutputSim 1 to n (0472-1 to n)	→  268
Freq value 1 to n (0473-1 to n)	→  269
Puls.outp.sim. 1 to n (0458-1 to n)	→  269
Pulse value 1 to n (0459-1 to n)	→  270
Switch sim. 1 to n (0462-1 to n)	→  270
Switch status 1 to n (0463-1 to n)	→  271
Relay out. 1 to n sim (0802-1 to n)	→  271
Switch status 1 to n (0803-1 to n)	→  272
Dev. alarm sim. (0654)	→  272
Event category (0738)	→  273
Diag. event sim. (0737)	→  273

Assign proc.var.



Navigation

  Expert → Diagnostics → Simulation → Assign proc.var. (1810)

Description

Use this function to select a process variable for the simulation process that is activated. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

Selection

- Off
- Mass flow
- Volume flow

- Correct.vol.flow^{*}
- Target vol. flow^{*}
- Carrier vol. fl.^{*}
- Targ.corr.vol.fl.^{*}
- Carr.corr.vol.fl.^{*}
- Density
- Ref.density^{*}
- Ref.dens.altern.^{*}
- GSV flow^{*}
- GSVa^{*}
- NSV flow^{*}
- NSVa^{*}
- S&W volume flow^{*}
- Water cut^{*}
- Oil density^{*}
- Water density^{*}
- Oil mass flow^{*}
- Water mass flow^{*}
- Oil volume flow^{*}
- Water vol. flow^{*}
- Oil corr.vol.fl.^{*}
- Water corr.v.fl.^{*}
- Density average^{*}
- Temp. average^{*}
- Temperature
- Dynam. viscosity^{*}
- Kinematic visc.^{*}
- TempCompDynVisc^{*}
- TempCompKinVisc^{*}
- Concentration^{*}
- Target mass flow^{*}
- Carrier mass fl.^{*}

Factory setting Off

Additional information *Description*

 The simulation value of the process variable selected is defined in the **Proc. var. value** parameter (→  265).

Proc. var. value

Navigation   Expert → Diagnostics → Simulation → Proc. var. value (1811)

Prerequisite A process variable is selected in the **Assign proc.var.** parameter (→  264).

Description Use this function to enter a simulation value for the selected process variable. Subsequent measured value processing and the signal output use this simulation value. In this way, users can verify whether the measuring device has been configured correctly.

User entry Depends on the process variable selected

Factory setting 0

^{*} Visibility depends on order options or device settings

Additional information *User entry*

The unit of the displayed measured value is taken from the **System units** submenu (→ 60).

Status inp. sim.**Navigation**

Expert → Diagnostics → Simulation → Status inp. sim. (1355)

Description

Use this function to switch simulation of the status input on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

Selection

- Off
- On

Factory setting

Off

Additional information

Description



The desired simulation value is defined in the **Signal level** parameter (→ 266).

Selection

- Off
Simulation for the status input is switched off. The device is in normal measuring mode or another process variable is being simulated.
- On
Simulation for the status input is active.

Signal level**Navigation**

Expert → Diagnostics → Simulation → Signal level (1356)

Prerequisite

In the **Status inp. sim.** parameter (→ 266), the **On** option is selected.

Description

Use this function to select the signal level for the simulation of the status input. In this way, users can verify the correct configuration of the status input and the correct function of upstream feed-in units.

Selection

- High
- Low

Curr.inp 1 to n sim.		
Navigation	  Expert → Diagnostics → Simulation → Curr.inp 1 to n sim. (1608–1 to n)	
Description	Option for switching simulation of the current input on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.  The desired simulation value is defined in the Value curr.inp 1 to n parameter.	
Selection	■ Off ■ On	
Factory setting	Off	
Additional information	<i>Selection</i> ■ Off Current simulation is switched off. The device is in normal measuring mode or another process variable is being simulated. ■ On Current simulation is active.	
Value curr.inp 1 to n		
Navigation	  Expert → Diagnostics → Simulation → Value curr.inp 1 to n (1609–1 to n)	
Prerequisite	In the Curr.inp 1 to n sim. parameter, the On option is selected.	
Description	Use this function to enter the current value for the simulation. In this way, users can verify the correct configuration of the current input and the correct function of upstream feed-in units.	
User entry	0 to 22.5 mA	
Curr.out. 1 to n sim.		
Navigation	  Expert → Diagnostics → Simulation → Curr.out. 1 to n sim. (0354–1 to n)	
Description	Use this function to switch simulation of the current output on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.	
Selection	■ Off ■ On	
Factory setting	Off	

Additional information	<i>Description</i>  The desired simulation value is defined in the Value curr.out 1 to n parameter. <i>Selection</i> ■ Off Current simulation is switched off. The device is in normal measuring mode or another process variable is being simulated. ■ On Current simulation is active.
-------------------------------	--

Value curr.out 1 to n



Navigation	 Expert → Diagnostics → Simulation → Value curr.out 1 to n (0355–1 to n)
Prerequisite	In the Curr.out. 1 to n sim. parameter, the On option is selected.
Description	Use this function to enter a current value for the simulation. In this way, users can verify the correct adjustment of the current output and the correct function of downstream switching units.
User entry	3.59 to 22.5 mA
Additional information	<i>Dependency</i> The input range is dependent on the option selected in the Current span parameter (→  103).

FreqOutputSim 1 to n



Navigation	 Expert → Diagnostics → Simulation → FreqOutputSim 1 to n (0472–1 to n)
Prerequisite	In the Operating mode parameter (→  117), the Frequency option is selected.
Description	Use this function to switch simulation of the frequency output on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.
Selection	■ Off ■ On
Factory setting	Off

Additional information*Description*

The desired simulation value is defined in the **Freq value 1 to n** parameter.

Selection

- Off
Frequency simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.
- On
Frequency simulation is active.

Freq value 1 to n**Navigation**

Expert → Diagnostics → Simulation → Freq value 1 to n (0473–1 to n)

Prerequisite

In the **FreqOutputSim 1 to n** parameter, the **On** option is selected.

Description

Use this function to enter a frequency value for the simulation. In this way, users can verify the correct adjustment of the frequency output and the correct function of downstream switching units.

User entry

0.0 to 12 500.0 Hz

Puls.outp.sim. 1 to n**Navigation**

Expert → Diagnostics → Simulation → Puls.outp.sim. 1 to n (0458–1 to n)

Prerequisite

In the **Operating mode** parameter (→ 117), the **Pulse** option is selected.

Description

Use this function to switch simulation of the pulse output on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

Selection

- Off
- Fixed value
- Down-count. val.

Factory setting

Off

Additional information*Description*

The desired simulation value is defined in the **Pulse value 1 to n** parameter.

Selection

- Off
Pulse simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.
- Fixed value
Pulses are continuously output with the pulse width specified in the **Pulse width** parameter (→ 120).
- Down-count. val.
The pulses specified in the **Pulse value** parameter (→ 270) are output.

Pulse value 1 to n**Navigation**

Expert → Diagnostics → Simulation → Pulse value 1 to n (0459–1 to n)

Prerequisite

In the **Puls.outp.sim. 1 to n** parameter, the **Down-count. val.** option is selected.

Description

Use this function to enter a pulse value for the simulation. In this way, users can verify the correct adjustment of the pulse output and the correct function of downstream switching units.

User entry

0 to 65 535

Switch sim. 1 to n**Navigation**

Expert → Diagnostics → Simulation → Switch sim. 1 to n (0462–1 to n)

Prerequisite

In the **Operating mode** parameter (→ 117), the **Switch** option is selected.

Description

Use this function to switch simulation of the switch output on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

Selection

- Off
- On

Factory setting

Off

Additional information	<i>Description</i>  The desired simulation value is defined in the Switch status 1 to n parameter. <i>Selection</i> ■ Off Switch simulation is switched off. The device is in normal measuring mode or another process variable is being simulated. ■ On Switch simulation is active.
Switch status 1 to n 	
Navigation	 Expert → Diagnostics → Simulation → Switch status 1 to n (0463–1 to n)
Description	Use this function to select a switch value for the simulation. In this way, users can verify the correct adjustment of the switch output and the correct function of downstream switching units.
Selection	■ Open ■ Closed
Additional information	<i>Selection</i> ■ Open Switch simulation is switched off. The device is in normal measuring mode or another process variable is being simulated. ■ Closed Switch simulation is active.
Relay out. 1 to n sim 	
Navigation	 Expert → Diagnostics → Simulation → Relay out. 1 to n sim (0802–1 to n)
Description	Use this function to switch simulation of the relay output on and off. The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.
Selection	■ Off ■ On
Factory setting	Off

Additional information *Description*

The desired simulation value is defined in the **Switch status 1 to n** parameter.

Selection

- Off
Relay simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.
- On
Relay simulation is active.

Switch status 1 to n**Navigation**

Expert → Diagnostics → Simulation → Switch status 1 to n (0803–1 to n)

Prerequisite

The **On** option is selected in the **Switch sim. 1 to n** parameter parameter.

Description

Use this function to select a relay value for the simulation. In this way, users can verify the correct adjustment of the relay output and the correct function of downstream switching units.

Selection

- Open
- Closed

Additional information*Selection*

- Open
Relay simulation is switched off. The device is in normal measuring mode or another process variable is being simulated.
- Closed
Relay simulation is active.

Dev. alarm sim.**Navigation**

Expert → Diagnostics → Simulation → Dev. alarm sim. (0654)

Description

Use this function to switch the device alarm on and off.

Selection

- Off
- On

Factory setting

Off

Additional information*Description*

The display alternates between the measured value and a diagnostic message of the "Function check" category (C) while simulation is in progress.

Event category		
Navigation		Expert → Diagnostics → Simulation → Event category (0738)
Description		Use this function to select the category of the diagnostic events that are displayed for the simulation in the Diag. event sim. parameter (→  273).
Selection		■ Sensor ■ Electronics ■ Configuration ■ Process
Factory setting		Process
Diag. event sim.		
Navigation	 	Expert → Diagnostics → Simulation → Diag. event sim. (0737)
Description		Use this function to select a diagnostic event for the simulation process that is activated.
Selection		■ Off ■ Diagnostic event picklist (depends on the category selected)
Factory setting		Off
Additional information		<i>Description</i>  For the simulation, you can choose from the diagnostic events of the category selected in the Event category parameter (→  273).

4 Country-specific factory settings

4.1 SI units

 Not valid for USA and Canada.

4.1.1 System units

Mass	kg
Mass flow	kg/h
Volume	l
Volume flow	l/h
Corrected volume	Nl
Corrected volume flow	Nl/h
Density	kg/l
Reference density	kg/Nl
Temperature	°C
Pressure	bar a

4.1.2 Full scale values

 The factory settings apply to the following parameters:

- 20 mA value (full scale value of the current output)
- 100% bar graph value 1

Nominal diameter [mm]	[kg/h]
1	4
2	20
4	90
8	400
15	1 300
15 FB	3 600
25	3 600
25 FB	9 000
40	9 000
40 FB	14 000
50	14 000
50 FB	36 000
80	36 000
100	60 000
150	130 t/h
250	360 t/h
350	650 t/h

4.1.3 Output current span

Current output 1 to n	4 to 20 mA NAMUR
-----------------------	------------------

4.1.4 Pulse value

Nominal diameter [mm]	[kg/p]
1	0.001
2	0.01
4	0.01
8	0.1
15	0.1
15 FB	1
25	1
25 FB	1
40	1
40 FB	10
50	10
50 FB	10
80	10
100	10
150	100
250	100
350	100

4.1.5 On value low flow cut off



The switch-on point depends on the type of medium and the nominal diameter.

Nominal diameter [mm]	On-value for liquid [kg/h]
1	0.08
2	0.4
4	1.8
8	8
15	26
15 FB	72
25	72
25 FB	180
40	180
40 FB	300
50	300
50 FB	720
80	720
100	1200

Nominal diameter [mm]	On-value for liquid [kg/h]
150	2.6 t/h
250	7.2 t/h
350	13 t/h

Nominal diameter [mm]	Switch-on value for gas [kg/h]
1	0.02
2	0.1
4	0.45
8	2
15	6.5
15 FB	18
25	18
25 FB	45
40	45
40 FB	75
50	75
50 FB	180
80	180
100	300
150	650
250	1.8 t/h
350	3.25 t/h

4.2 US units



Only valid for USA and Canada.

4.2.1 System units

Mass	lb
Mass flow	lb/min
Volume	gal (us)
Volume flow	gal/min (us)
Corrected volume	Sft ³
Corrected volume flow	Sft ³ /min
Density	lb/ft ³
Reference density	lb/Sft ³
Temperature	°F
Pressure	psi a

4.2.2 Full scale values



The factory settings apply to the following parameters:

- 20 mA value (full scale value of the current output)
- 100% bar graph value 1

Nominal diameter [in]	[lb/min]
$1/24$	0.15
$1/12$	0.75
$1/8$	3.3
$3/8$	15
$1/2$	50
$1/2$ FB	130
1	130
1 FB	330
$1\frac{1}{2}$	330
$1\frac{1}{2}$ FB	550
2	550
2 FB	1300
3	1300
4	2200
6	4800
10	13000
14	23500

4.2.3 Output current span

Current output 1 to n	4 to 20 mA US
-----------------------	---------------

4.2.4 Pulse value

Nominal diameter [in]	[lb/p]
$1/24$	0.002
$1/12$	0.02
$1/8$	0.02
$3/8$	0.2
$1/2$	0.2
$1/2$ FB	2
1	2
1 FB	2
$1\frac{1}{2}$	2
$1\frac{1}{2}$ FB	20
2	20
2 FB	20
3	20

Nominal diameter [in]	[lb/p]
4	20
6	200
10	200
14	200

4.2.5 On value low flow cut off



The switch-on point depends on the type of medium and the nominal diameter.

Nominal diameter [in]	On-value for liquid [lb/min]
$\frac{1}{24}$	0.003
$\frac{1}{12}$	0.015
$\frac{1}{8}$	0.066
$\frac{3}{8}$	0.3
$\frac{1}{2}$	1
$\frac{1}{2}$ FB	2.6
1	2.6
1 FB	6.6
$1\frac{1}{2}$	6.6
$1\frac{1}{2}$ FB	11
2	11
2 FB	26
3	26
4	44
6	95
10	260
14	470

Nominal diameter [in]	Switch-on value for gas [lb/min]
$\frac{1}{24}$	0.001
$\frac{1}{12}$	0.004
$\frac{1}{8}$	0.016
$\frac{3}{8}$	0.075
$\frac{1}{2}$	0.25
$\frac{1}{2}$ FB	0.65
1	0.65
1 FB	1.65
$1\frac{1}{2}$	1.65
$1\frac{1}{2}$ FB	2.75
2	2.75
2 FB	6.5

Nominal diameter [in]	Switch-on value for gas [lb/min]
3	6.5
4	11
6	23.75
10	65
14	117.5

5 Explanation of abbreviated units

5.1 SI units

Process variable	Units	Explanation
Density	g/cm ³ , g/m ³	Gram/volume unit
	kg/dm ³ , kg/l, kg/m ³	Kilogram/volume unit
	SD4°C, SD15°C, SD20°C	Specific density: The specific density is the ratio of the density of the fluid to the density of water at a water temperature of 4 °C (39 °F), 15 °C (59 °F), 20 °C (68 °F).
	SG4°C, SG15°C, SG20°C	Specific gravity: The specific gravity is the ratio of the density of the fluid to the density of water at a water temperature of 4 °C (39 °F), 15 °C (59 °F), 20 °C (68 °F).
Pressure	Pa a, kPa a, MPa a	Pascal, kilopascal, megapascal (absolute)
	bar	Bar
	Pa g, kPa g, MPa g	Pascal, kilopascal, megapascal (relative/gauge)
	bar g	Bar (relative/gauge)
Mass	g, kg, t	Gram, kilogram, metric ton
Mass flow	g/s, g/min, g/h, g/d	Gram/time unit
	kg/s, kg/min, kg/h, kg/d	Kilogram/time unit
	t/s, t/min, t/h, t/d	Metric ton/time unit
Ref.density	kg/Nm ³ , kg/Nl, g/Scm ³ , kg/Sm ³	Kilogram, gram/standard volume unit
Corrected volume	Nl, Nm ³ , Sm ³	Normal liter, normal cubic meter, standard cubic meter
Correct.vol.flow	Nl/s, Nl/min, Nl/h, Nl/d	Normal liter/time unit
	Nm ³ /s, Nm ³ /min, Nm ³ /h, Nm ³ /d	Normal cubic meter/time unit
	Sm ³ /s, Sm ³ /min, Sm ³ /h, Sm ³ /d	Standard cubic meter/time unit
Temperature	°C, K	Celsius, Kelvin
Volume	cm ³ , dm ³ , m ³	Cubic centimeter, cubic decimeter, cubic meter
	ml, l, hl, Ml Mega	Milliliter, liter, hectoliter, megaliter
Volume flow	cm ³ /s, cm ³ /min, cm ³ /h, cm ³ /d	Cubic centimeter/time unit
	dm ³ /s, dm ³ /min, dm ³ /h, dm ³ /d	Cubic decimeter/time unit
	m ³ /s, m ³ /min, m ³ /h, m ³ /d	Cubic meter/time unit
	ml/s, ml/min, ml/h, ml/d	Milliliter/time unit
	l/s, l/min, l/h, l/d	Liter/time unit
	hl/s, hl/min, hl/h, hl/d	Hectoliter/time unit
	Ml/s, Ml/min, Ml/h, Ml/d	Megaliter/time unit
Time	s, m, h, d, y	Second, minute, hour, day, year

5.2 US units

Process variable	Units	Explanation
Density	lb/ft ³ , lb/gal (us)	Pound/cubic foot, pound/gallon
	lb/bbl (us;liq.), lb/bbl (us;beer), lb/bbl (us;oil), lb/bbl (us;tank)	Pound/volume unit

Process variable	Units	Explanation
Pressure	psi a	Pounds per square inch (absolute)
	psi g	Pounds per square inch (gauge)
Mass	oz, lb, STon	Ounce, pound, standard ton
Mass flow	oz/s, oz/min, oz/h, oz/d	Ounce/time unit
	lb/s, lb/min, lb/h, lb/d	Pound/time unit
	STon/s, STon/min, STon/h, STon/d	Standard ton/time unit
Ref.density	lb/Sft ³	Weight unit/standard volume unit
Corrected volume	Sft ³ , Sgal (us), Sbbl (us;liq.)	Standard cubic foot, standard gallon, standard barrel
Correct.vol.flow	Sft ³ /s, Sft ³ /min, Sft ³ /h, Sft ³ /d	Standard cubic foot/time unit
	Sgal/s (us), Sgal/min (us), Sgal/h (us), Sgal/d (us)	Standard gallon/time unit
	Sbbl/s (us;liq.), Sbbl/min (us;liq.), Sbbl/h (us;liq.), Sbbl/d (us;liq.)	Barrel/time unit (normal liquids)
Temperature	°F, °R	Fahrenheit, Rankine
Volume	af	Acre foot
	ft ³	Cubic foot
	fl oz (us), gal (us), kgal (us), Mgal (us)	Fluid ounce, gallon, kilogallon, million gallon
	bbl (us;liq.), bbl (us;beer), bbl (us;oil), bbl (us;tank)	Barrel (normal liquids), barrel (beer), barrel (petrochemicals), barrel (filling tanks)
Volume flow	af/s, af/min, af/h, af/d	Acre foot/time unit
	ft ³ /s, ft ³ /min, ft ³ /h, ft ³ /d	Cubic foot/time unit
	fl oz/s (us), fl oz/min (us), fl oz/h (us), fl oz/d (us)	Fluid ounce/time unit
	gal/s (us), gal/min (us), gal/h (us), gal/d (us)	Gallon/time unit
	kgal/s (us), kgal/min (us), kgal/h (us), kgal/d (us)	Kilogallon/time unit
	Mgal/s (us), Mgal/min (us), Mgal/h (us), Mgal/d (us)	Million gallon/time unit
	bbl/s (us;liq.), bbl/min (us;liq.), bbl/h (us;liq.), bbl/d (us;liq.)	Barrel/time unit (normal liquids) Normal liquids: 31.5 gal/bbl
	bbl/s (us;beer), bbl/min (us;beer), bbl/h (us;beer), bbl/d (us;beer)	Barrel /time unit (beer) Beer: 31.0 gal/bbl
	bbl/s (us;oil), bbl/min (us;oil), bbl/h (us;oil), bbl/d (us;oil)	Barrel/time unit (petrochemicals) Petrochemicals: 42.0 gal/bbl
	bbl/s (us;tank), bbl/min (us;tank), bbl/h (us;tank), bbl/d (us;tank)	Barrel/time unit (filling tank) Filling tanks: 55.0 gal/bbl
Time	s, m, h, d, y	Second, minute, hour, day, year
	am, pm	Ante meridiem (before midday), post meridiem (after midday)

5.3 Imperial units

Process variable	Units	Explanation
Density	lb/gal (imp), lb/bbl (imp;beer), lb/bbl (imp;oil)	Pound/volume unit
Corrected volume	Sgal (imp)	Standard gallon
Correct.vol.flow	Sgal/s (imp), Sgal/min (imp), Sgal/h (imp), Sgal/d (imp)	Standard gallon/time unit
Volume	gal (imp), Mgal (imp)	Gallon, mega gallon
	bbl (imp;beer), bbl (imp;oil)	Barrel (beer), barrel (petrochemicals)
Volume flow	gal/s (imp), gal/min (imp), gal/h (imp), gal/d (imp)	Gallon/time unit
	Mgal/s (imp), Mgal/min (imp), Mgal/h (imp), Mgal/d (imp)	Mega gallon/time unit
	bbl/s (imp;beer), bbl/min (imp;beer), bbl/h (imp;beer), bbl/d (imp;beer)	Barrel /time unit (beer) Beer: 36.0 gal/bbl
	bbl/s (imp;oil), bbl/min (imp;oil), bbl/h (imp;oil), bbl/d (imp;oil)	Barrel/time unit (petrochemicals) Petrochemicals: 34.97 gal/bbl
Time	s, m, h, d, y	Second, minute, hour, day, year
	am, pm	Ante meridiem (before midday), post meridiem (after midday)

Index

0 ... 9

- 0/4 mA value (Parameter) 97, 105
- 0% bargraph value 1 (Parameter) 19
- 0% bargraph value 3 (Parameter) 22
- 2.4 GHz WLAN channel (Parameter) 165
- 20 mA value (Parameter) 97, 106
- 100% bargraph value 1 (Parameter) 20
- 100% bargraph value 3 (Parameter) 23

A

- Access status (Parameter) 13
- Activate SW option (Parameter) 44
- Active level (Parameter) 100
- Actual diagnostics (Parameter) 226
- Address mode (Parameter) 144
- Administration (Submenu) 40
- Alarm delay (Parameter) 31
- Alarm hysteresis (Parameter) 175, 220
- Alarm summary (Parameter) 150, 172, 185, 193, 206, 218
- Alert key (Parameter) ... 149, 171, 184, 192, 204, 217
- Alteration code (Parameter) 95
- Analog input 1 to n (Submenu) 167
- Analog inputs (Submenu) 166
- Analog output 1 to n (Submenu) 188
- Analog outputs (Submenu) 188
- Application (Submenu) 210
- Apply I/O configuration (Parameter) 94
- Assign behavior of diagnostic no. 046 (Parameter) ... 33
- Assign behavior of diagnostic no. 140 (Parameter) ... 33
- Assign behavior of diagnostic no. 144 (Parameter) ... 34
- Assign behavior of diagnostic no. 302 (Parameter) ... 34
- Assign behavior of diagnostic no. 374 (Parameter) ... 34
- Assign behavior of diagnostic no. 441 (Parameter) ... 35
- Assign behavior of diagnostic no. 442 (Parameter) ... 35
- Assign behavior of diagnostic no. 443 (Parameter) ... 35
- Assign behavior of diagnostic no. 444 (Parameter) ... 36
- Assign behavior of diagnostic no. 830 (Parameter) ... 36
- Assign behavior of diagnostic no. 831 (Parameter) ... 36
- Assign behavior of diagnostic no. 832 (Parameter) ... 37
- Assign behavior of diagnostic no. 833 (Parameter) ... 37
- Assign behavior of diagnostic no. 834 (Parameter) ... 38
- Assign behavior of diagnostic no. 835 (Parameter) ... 38
- Assign behavior of diagnostic no. 842 (Parameter) ... 38
- Assign behavior of diagnostic no. 862 (Parameter) ... 39
- Assign behavior of diagnostic no. 912 (Parameter) ... 39
- Assign behavior of diagnostic no. 913 (Parameter) ... 39
- Assign behavior of diagnostic no. 944 (Parameter) ... 40
- Assign behavior of diagnostic no. 948 (Parameter) ... 40
- Assign channel 1 (Parameter) 255
- Assign channel 2 (Parameter) 256
- Assign channel 3 (Parameter) 257
- Assign channel 4 (Parameter) 257
- Assign current output 1 to n (Parameter) 102
- Assign diagnostic behavior (Parameter) 130, 140
- Assign flow direction check (Parameter) 134, 138

- Assign frequency output (Parameter) 123
- Assign limit (Parameter) 131, 139
- Assign process variable (Parameter) 71, 74, 211
- Assign pulse output 1 to n (Parameter) 119
- Assign simulation process variable (Parameter) 264
- Assign SSID name (Parameter) 164
- Assign status (Parameter) 134, 140
- Assign status input (Parameter) 99

B

- Backlight (Parameter) 27
- Backup state (Parameter) 29
- Batch ID (Parameter) 173, 186, 194, 206, 219
- Batch operation (Parameter) .. 173, 186, 194, 206, 219
- Batch phase (Parameter) 173, 186, 194, 207, 219
- Batch Recipe Unit Procedure (Parameter) 173, 187, 194, 207, 219
- Baudrate (Parameter) 146
- Bootloader revision (Parameter) 238, 239, 241, 242
- Build no. software (Parameter) 238, 239, 241, 242

C

- C0 to 5 (Parameter) 93
- Calculated values (Submenu) 81
- Calibration (Submenu) 91
- Calibration factor (Parameter) 92
- Carrier corrected volume flow (Parameter) 52
- Carrier mass flow (Parameter) 52
- Carrier pipe temperature (Submenu) 246
- Carrier volume flow (Parameter) 53
- Channel (Parameter) 167, 181
- Clear logging data (Parameter) 258
- Communication (Submenu) 143
- Comparison result (Parameter) 30
- Concentration (Parameter) 51
- Concentration (Submenu) 224
- Condensed status diagnostic (Parameter) 156
- Configuration backup (Submenu) 28
- Configuration management (Parameter) 28
- Confirm access code (Parameter) 42
- Connection state (Parameter) 165
- Contrast display (Parameter) 27
- Control Totalizer 1 to n (Parameter) 213
- Corrected volume flow (Parameter) 48
- Corrected volume flow calculation (Parameter) 82
- Corrected volume flow calculation (Submenu) 81
- Corrected volume flow factor (Parameter) 90
- Corrected volume flow offset (Parameter) 89
- Corrected volume flow unit (Parameter) 64
- Corrected volume unit (Parameter) 64
- Current input 1 to n (Submenu) 55, 95
- Current input 1 to n simulation (Parameter) 267
- Current output 1 to n (Submenu) 101
- Current output 1 to n simulation (Parameter) 267
- Current span (Parameter) 96, 103

D

Damping output 1 to n (Parameter)	112, 126
Data logging (Parameter)	258
Data logging (Submenu)	254
Data logging control (Parameter)	259
Data logging status (Parameter)	260
Date/time format (Parameter)	68
Decimal places 1 (Parameter)	20
Decimal places 2 (Parameter)	21
Decimal places 3 (Parameter)	23
Decimal places 4 (Parameter)	24
Default gateway (Parameter)	159
Define access code (Parameter)	41
Define access code (Wizard)	41
Density (Parameter)	48
Density damping (Parameter)	69
Density factor (Parameter)	89
Density offset (Parameter)	89
Density unit (Parameter)	65
Descriptor (Parameter)	154
Device address (Parameter)	144
Device alarm simulation (Parameter)	272
Device certification (Parameter)	153
Device ID (Parameter)	152
Device information (Submenu)	234
Device install date (Parameter)	154
Device message (Parameter)	154
Device name (Parameter)	236
Device reset (Parameter)	43
Device tag (Parameter)	148, 235
DHCP client (Parameter)	158
Diagnostic behavior (Submenu)	31
Diagnostic event category (Parameter)	273
Diagnostic event simulation (Parameter)	273
Diagnostic handling (Submenu)	31
Diagnostic list (Submenu)	228
Diagnostics (Parameter)	152
Diagnostics (Submenu)	225
Diagnostics 1 (Parameter)	228
Diagnostics 2 (Parameter)	229
Diagnostics 3 (Parameter)	230
Diagnostics 4 (Parameter)	230
Diagnostics 5 (Parameter)	231
Diagnostics mask (Parameter)	153
Direct access	
0/4 mA value	
Current input 1 to n (1606-1 to n)	97
Current output 1 to n (0367-1 to n)	105
0% bargraph value 1 (0123)	19
0% bargraph value 3 (0124)	22
2.4 GHz WLAN channel (2704)	165
20 mA value	
Current input 1 to n (1607-1 to n)	97
Current output 1 to n (0372-1 to n)	106
100% bargraph value 1 (0125)	20
100% bargraph value 3 (0126)	23
Access status (0005)	13
Activate SW option (0029)	44

Active level	
Status input 1 to n (1351-1 to n)	100
Actual diagnostics (0691)	226
Address mode (1468)	144
Alarm delay (0651)	31
Alarm hysteresis	
Analog input 1 to n (1527-1 to n)	175
Totalizer 1 to n (3802-1 to n)	220
Alarm summary	
Analog input 1 to n (1537-1 to n)	172
Analog output 1 to n (1642-1 to n)	193
Discrete input 1 to n (2191-1 to n)	185
Discrete output 1 to n (1701-1 to n)	206
Totalizer 1 to n (3809-1 to n)	218
Alarm summary (1474)	150
Alert key	
Analog input 1 to n (1522-1 to n)	171
Analog output 1 to n (1632-1 to n)	192
Discrete input 1 to n (2182-1 to n)	184
Discrete output 1 to n (1694-1 to n)	204
Totalizer 1 to n (3803-1 to n)	217
Alert key (1473)	149
Alteration code (2762)	95
Apply I/O configuration (3907)	94
Assign behavior of diagnostic no. 046 (0709)	33
Assign behavior of diagnostic no. 140 (0708)	33
Assign behavior of diagnostic no. 144 (0731)	34
Assign behavior of diagnostic no. 302 (0739)	34
Assign behavior of diagnostic no. 374 (0710)	34
Assign behavior of diagnostic no. 441 (0657)	35
Assign behavior of diagnostic no. 442 (0658)	35
Assign behavior of diagnostic no. 443 (0659)	35
Assign behavior of diagnostic no. 444 (0740)	36
Assign behavior of diagnostic no. 830 (0800)	36
Assign behavior of diagnostic no. 831 (0641)	36
Assign behavior of diagnostic no. 832 (0681)	37
Assign behavior of diagnostic no. 833 (0682)	37
Assign behavior of diagnostic no. 834 (0700)	38
Assign behavior of diagnostic no. 835 (0702)	38
Assign behavior of diagnostic no. 842 (0638)	38
Assign behavior of diagnostic no. 862 (0679)	39
Assign behavior of diagnostic no. 912 (0703)	39
Assign behavior of diagnostic no. 913 (0712)	39
Assign behavior of diagnostic no. 944 (0732)	40
Assign behavior of diagnostic no. 948 (0744)	40
Assign channel 1 (0851)	255
Assign channel 2 (0852)	256
Assign channel 3 (0853)	257
Assign channel 4 (0854)	257
Assign current output 1 to n (0359-1 to n)	102
Assign diagnostic behavior	
Pulse/frequency/switch output 1 to n (0482-1 to n)	130
Relay output 1 to n (0806-1 to n)	140
Assign flow direction check	
Pulse/frequency/switch output 1 to n (0484-1 to n)	134
Relay output 1 to n (0808-1 to n)	138

Assign frequency output		
Pulse/frequency/switch output 1 to n (0478-1 to n)	123	
Assign limit		
Pulse/frequency/switch output 1 to n (0483-1 to n)	131	
Relay output 1 to n (0807-1 to n)	139	
Assign process variable		
Totalizer 1 to n (3808-1 to n)	211	
Assign process variable (1837)	71	
Assign process variable (1860)	74	
Assign pulse output 1 to n (0460-1 to n)	119	
Assign simulation process variable (1810)	264	
Assign SSID name (2708)	164	
Assign status		
Pulse/frequency/switch output 1 to n (0485-1 to n)	134	
Relay output 1 to n (0805-1 to n)	140	
Assign status input		
Status input 1 to n (1352-1 to n)	99	
Backlight (0111)	27	
Backup state (2759)	29	
Batch ID		
Analog input 1 to n (1533-1 to n)	173	
Analog output 1 to n (1633-1 to n)	194	
Discrete input 1 to n (2183-1 to n)	186	
Discrete output 1 to n (1695-1 to n)	206	
Totalizer 1 to n (3804-1 to n)	219	
Batch operation		
Analog input 1 to n (1534-1 to n)	173	
Analog output 1 to n (1639-1 to n)	194	
Discrete input 1 to n (2184-1 to n)	186	
Discrete output 1 to n (1698-1 to n)	206	
Totalizer 1 to n (3805-1 to n)	219	
Batch phase		
Analog input 1 to n (1535-1 to n)	173	
Analog output 1 to n (1640-1 to n)	194	
Discrete input 1 to n (2185-1 to n)	186	
Discrete output 1 to n (1699-1 to n)	207	
Totalizer 1 to n (3806-1 to n)	219	
Batch Recipe Unit Procedure		
Analog input 1 to n (1536-1 to n)	173	
Analog output 1 to n (1641-1 to n)	194	
Discrete input 1 to n (2186-1 to n)	187	
Discrete output 1 to n (1700-1 to n)	207	
Totalizer 1 to n (3807-1 to n)	219	
Baudrate (1504)	146	
Bootloader revision		
I/O module 2 (0073)	241	
I/O module 3 (0073)	241	
I/O module 4 (0073)	241	
Bootloader revision (0073)	238, 239, 242	
Build no. software		
I/O module 2 (0079)	241	
I/O module 3 (0079)	241	
I/O module 4 (0079)	241	
Build no. software (0079)	238, 239, 242	
C0 to 5 (6022)	93	
Calibration factor (6025)	92	
Carrier corrected volume flow (1894)	52	
Carrier mass flow (1865)	52	
Carrier volume flow (1896)	53	
Channel		
Analog input 1 to n (1561-1 to n)	167	
Discrete input 1 to n (2187-1 to n)	181	
Clear logging data (0855)	258	
Comparison result (2760)	30	
Concentration (1887)	51	
Condensed status diagnostic (1500)	156	
Configuration management (2758)	28	
Connection state (2722)	165	
Contrast display (0105)	27	
Control Totalizer 1 to n (3830-1 to n)	213	
Corrected volume flow (1851)	48	
Corrected volume flow calculation (1812)	82	
Corrected volume flow factor (1867)	90	
Corrected volume flow offset (1866)	89	
Corrected volume flow unit (0558)	64	
Corrected volume unit (0575)	64	
Current input 1 to n simulation (1608-1 to n) ..	267	
Current output 1 to n simulation (0354-1 to n) ..	267	
Current span		
Current input 1 to n (1605-1 to n)	96	
Current output 1 to n (0353-1 to n)	103	
Damping output 1 to n (0363-1 to n)	112	
Damping output 1 to n (0477-1 to n)	126	
Data logging (0860)	258	
Data logging control (0857)	259	
Data logging status (0858)	260	
Date/time format (2812)	68	
Decimal places 1 (0095)	20	
Decimal places 2 (0117)	21	
Decimal places 3 (0118)	23	
Decimal places 4 (0119)	24	
Default gateway (7210)	159	
Density (1850)	48	
Density damping (1803)	69	
Density factor (1849)	89	
Density offset (1848)	89	
Density unit (0555)	65	
Descriptor (1489)	154	
Device address (1462)	144	
Device alarm simulation (0654)	272	
Device certification (1486)	153	
Device ID (1480)	152	
Device install date (1491)	154	
Device message (1490)	154	
Device name (0020)	236	
Device reset (0000)	43	
Device tag (0011)	235	
Device tag (1496)	148	
DHCP client (7212)	158	
Diagnostic event category (0738)	273	
Diagnostic event simulation (0737)	273	
Diagnostics (1482)	152	
Diagnostics 1 (0692)	228	
Diagnostics 2 (0693)	229	
Diagnostics 3 (0694)	230	

- Diagnostics 4 (0695) 230
- Diagnostics 5 (0696) 231
- Diagnostics mask (1484) 153
- Direct access (0106) 11
- Display damping (0094) 25
- Display interval (0096) 24
- Display language (0104) 15
- Dynamic viscosity (1854) 49
- ENP version (0012) 237
- Enter access code (0003) 13
- Entire logging duration (0861) 260
- Extended order code 1 (0023) 237
- Extended order code 2 (0021) 237
- Extended order code 3 (0022) 237
- External pressure (6209) 80
- External reference density (6198) 82
- External temperature (6080) 81
- Factory reset (1488) 154
- Fail safe time
 - Analog output 1 to n (1635–1 to n) 189
 - Discrete output 1 to n (1697–1 to n) 201
- Fail safe type
 - Analog input 1 to n (1525–1 to n) 168
 - Analog output 1 to n (1636–1 to n) 190
 - Discrete input 1 to n (2189–1 to n) 182
 - Discrete output 1 to n (1696–1 to n) 202
- Fail-safe value
 - Analog input 1 to n (1526–1 to n) 169
 - Analog output 1 to n (1637–1 to n) 190
 - Discrete input 1 to n (2190–1 to n) 182
 - Discrete output 1 to n (1693–1 to n) 202
- Failure current
 - Current output 1 to n (0352–1 to n) 114
- Failure frequency
 - Pulse/frequency/switch output 1 to n (0474–1 to n) 129
- Failure mode
 - Current input 1 to n (1601–1 to n) 98
 - Current output 1 to n (0364–1 to n) 113
 - Pulse/frequency/switch output 1 to n (0451–1 to n) 128
 - Pulse/frequency/switch output 1 to n (0480–1 to n) 121
 - Pulse/frequency/switch output 1 to n (0486–1 to n) 135
 - Relay output 1 to n (0811–1 to n) 142
 - Totalizer 1 to n (3810–1 to n) 215
- Failure value
 - Current input 1 to n (1602–1 to n) 98
- Feature enabled (1476) 156
- Feature supported (1477) 156
- Filter options 233
- Filter options (0705) 232
- Firmware version (0010) 236
- Fixed current
 - Current output 1 to n (0365–1 to n) 104
- Fixed reference density (1814) 82
- Flow damping (1802) 69
- Flow override (1839) 70
- Format display (0098) 15
- Frequency output simulation 1 to n (0472–1 to n) 268
- Frequency value 1 to n (0473–1 to n) 269
- Gateway IP address (2719) 166
- Hardware lock (1499) 155
- Hardware revision (1479) 151
- Header (0097) 25
- Header text (0112) 26
- Hi alarm state
 - Analog input 1 to n (1538–1 to n) 178
 - Totalizer 1 to n (3811–1 to n) 223
- Hi alarm value
 - Analog input 1 to n (1539–1 to n) 178
 - Totalizer 1 to n (3812–1 to n) 223
- Hi Hi alarm state
 - Analog input 1 to n (1540–1 to n) 178
 - Totalizer 1 to n (3813–1 to n) 222
- Hi Hi alarm value
 - Analog input 1 to n (1541–1 to n) 177
 - Totalizer 1 to n (3814–1 to n) 222
- Hi Hi Lim
 - Analog input 1 to n (1528–1 to n) 176
 - Totalizer 1 to n (3815–1 to n) 220
- Hi Lim
 - Analog input 1 to n (1529–1 to n) 176
 - Totalizer 1 to n (3816–1 to n) 221
- High value partial filled pipe detection (1858) 75
- I/O module 1 terminal numbers (3902–1) 240
- I/O module 1 to n information (3906–1 to n) 93
- I/O module 1 to n terminal numbers (3902–1 to n) 93
- I/O module 1 to n type (3901–1 to n) 94
- I/O module 2 terminal numbers
 - I/O module 2 (3902) 241
- Ident number selector (1461) 145, 155
- Increase close
 - Analog output 1 to n (1638–1 to n) 199
- Input channel
 - Analog output 1 to n (1670–1 to n) 196
 - Discrete output 1 to n (1724–1 to n) 208
- Input signal level (1356) 266
- Installation angle pitch (6236) 85
- Installation angle roll (6282) 85
- Installation direction (1809) 84
- Invert
 - Discrete input 1 to n (2188–1 to n) 182
 - Discrete output 1 to n (1692–1 to n) 201
- Invert output signal
 - Pulse/frequency/switch output 1 to n (0470–1 to n) 136
- IP address (7209) 158
- IP address domain name server (2720) 166
- Kinematic viscosity (1857) 50
- Last backup (2757) 28
- Lin type
 - Analog input 1 to n (1523–1 to n) 175
- Linear expansion coefficient (1817) 83

Lo alarm state		
Analog input 1 to n (1542-1 to n)	179	
Totalizer 1 to n (3817-1 to n)	223	
Lo alarm value		
Analog input 1 to n (1543-1 to n)	178	
Totalizer 1 to n (3818-1 to n)	223	
Lo Lim		
Analog input 1 to n (1530-1 to n)	177	
Totalizer 1 to n (3819-1 to n)	221	
Lo Lo alarm state		
Analog input 1 to n (1544-1 to n)	179	
Totalizer 1 to n (3820-1 to n)	224	
Lo Lo alarm value		
Analog input 1 to n (1545-1 to n)	179	
Totalizer 1 to n (3821-1 to n)	224	
Lo Lo Lim		
Analog input 1 to n (1531-1 to n)	177	
Totalizer 1 to n (3822-1 to n)	222	
Locking status (0004)	12	
Logging delay (0859)	259	
Logging interval (0856)	257	
Login page (7273)	159	
Low value partial filled pipe detection (1861)	74	
MAC address (7214)	157	
Manufacturer ID (1502)	151	
Mass flow (1838)	47	
Mass flow factor (1832)	88	
Mass flow offset (1831)	87	
Mass flow unit (0554)	61	
Mass unit (0574)	61	
Master availability (1517)	147	
Max. switch cycles number		
Relay output 1 to n (0817-1 to n)	60	
Maximum damping partial filled pipe det. (6040) .	76	
Maximum frequency value		
Pulse/frequency/switch output 1 to n (0454-1 to n)	124	
Maximum value (0665)	244	
Maximum value (6009)	250	
Maximum value (6014)	253	
Maximum value (6029)	247	
Maximum value (6051)	245	
Maximum value (6068)	249	
Maximum value (6070)	248	
Maximum value (6108)	246	
Maximum value (6119)	252	
Maximum value (6121)	251	
Maximum value (6283)	253	
Measured current 1 to n (0366-1 to n)	57, 115	
Measured current 1 to n (1604-1 to n)	56	
Measured values 1 to n (1603-1 to n)	55	
Measuring mode		
Current output 1 to n (0351-1 to n)	107	
Pulse/frequency/switch output 1 to n (0457-1 to n)	121	
Pulse/frequency/switch output 1 to n (0479-1 to n)	125	
Measuring value at maximum frequency		
Pulse/frequency/switch output 1 to n (0475-1 to n)	125	
Measuring value at minimum frequency		
Pulse/frequency/switch output 1 to n (0476-1 to n)	124	
Minimum frequency value		
Pulse/frequency/switch output 1 to n (0453-1 to n)	124	
Minimum value (0688)	244	
Minimum value (6008)	250	
Minimum value (6010)	249	
Minimum value (6015)	252	
Minimum value (6030)	247	
Minimum value (6052)	245	
Minimum value (6069)	249	
Minimum value (6071)	248	
Minimum value (6109)	246	
Minimum value (6120)	252	
Minimum value (6122)	251	
Minimum value (6284)	253	
Mode block actual		
Analog input 1 to n (1521-1 to n)	171	
Analog output 1 to n (1631-1 to n)	192	
Discrete input 1 to n (2181-1 to n)	185	
Discrete output 1 to n (1691-1 to n)	205	
Totalizer 1 to n (3801-1 to n)	217	
Mode block actual (1472)	149	
Mode block normal		
Analog input 1 to n (1546-1 to n)	172	
Analog output 1 to n (1643-1 to n)	193	
Discrete input 1 to n (2192-1 to n)	185	
Discrete output 1 to n (1702-1 to n)	205	
Totalizer 1 to n (3824-1 to n)	218	
Mode block normal (1492)	150	
Mode block permitted		
Analog input 1 to n (1553-1 to n)	172	
Analog output 1 to n (1648-1 to n)	193	
Discrete input 1 to n (2195-1 to n)	185	
Discrete output 1 to n (1705-1 to n)	205	
Totalizer 1 to n (3828-1 to n)	218	
Mode block permitted (1493)	150	
Network security (2705)	162	
Nominal diameter (2807)	92	
Off value low flow cutoff (1804)	72	
On value low flow cutoff (1805)	71	
Operating mode		
Pulse/frequency/switch output 1 to n (0469-1 to n)	117	
Operating time (0652)	28, 42, 227	
Operating time from restart (0653)	227	
Order code (0008)	236	
Out decimal point		
Analog input 1 to n (1547-1 to n)	175	
Out scale lower range		
Analog input 1 to n (1548-1 to n)	174	
Analog output 1 to n (1644-1 to n)	200	
Out scale upper range		
Analog input 1 to n (1551-1 to n)	174	

- Analog output 1 to n (1646–1 to n) 199
- Out status
 - Analog input 1 to n (1549–1 to n) 170
 - Analog input 1 to n (1564–1 to n) 169
 - Analog output 1 to n (1645–1 to n) 191
 - Analog output 1 to n (1669–1 to n) 191
 - Discrete input 1 to n (2193–1 to n) 183
 - Discrete input 1 to n (2203–1 to n) 183
 - Discrete output 1 to n (1703–1 to n) 203
 - Discrete output 1 to n (1723–1 to n) 203
- Out unit
 - Analog input 1 to n (1550–1 to n) 175
- Out unit text
 - Analog input 1 to n (1532–1 to n) 180
- Out value
 - Analog input 1 to n (1552–1 to n) 169
 - Analog output 1 to n (1647–1 to n) 190
 - Discrete input 1 to n (2194–1 to n) 183
 - Discrete output 1 to n (1704–1 to n) 203
- Output channel
 - Analog output 1 to n (1671–1 to n) 197
 - Discrete output 1 to n (1725–1 to n) 208
- Output current 1 to n (0361–1 to n) 57, 115
- Output frequency 1 to n (0471–1 to n) 58, 129
- Position status
 - Analog output 1 to n (1649–1 to n) 198
- Position value
 - Analog output 1 to n (1650–1 to n) 197
- Powerless relay status
 - Relay output 1 to n (0816–1 to n) 143
- Preset value 1 to n (3829–1 to n) 214
- Pressure compensation (6130) 79
- Pressure shock suppression (1806) 72
- Pressure unit (0564) 67
- Pressure value (6059) 79
- Pressure value (6129) 49
- Previous diagnostics (0690) 226
- Process variable value (1811) 265
- PROFIBUS ident number (1464) 146
- Profile version (1463) 146
- Progress (2808) 87
- Pulse output 1 to n (0456–1 to n) 58, 122
- Pulse output simulation 1 to n (0458–1 to n) ... 269
- Pulse value 1 to n (0459–1 to n) 270
- Pulse width
 - Pulse/frequency/switch output 1 to n (0452–1 to n) 120
- PV filter time
 - Analog input 1 to n (1524–1 to n) 168
- PV scale lower range
 - Analog input 1 to n (1554–1 to n) 174
 - Analog output 1 to n (1651–1 to n) 195
- PV scale upper range
 - Analog input 1 to n (1555–1 to n) 174
 - Analog output 1 to n (1652–1 to n) 195
- RCAS in status
 - Analog output 1 to n (1654–1 to n) 196
 - Discrete output 1 to n (1706–1 to n) 208
- RCAS in value
 - Analog output 1 to n (1655–1 to n) 196
 - Discrete output 1 to n (1707–1 to n) 208
- RCAS out status
 - Analog output 1 to n (1656–1 to n) 197
 - Discrete output 1 to n (1708–1 to n) 209
- RCAS out value
 - Analog output 1 to n (1657–1 to n) 197
 - Discrete output 1 to n (1711–1 to n) 209
- Readback status
 - Analog output 1 to n (1658–1 to n) 196
 - Discrete output 1 to n (1712–1 to n) 207
- Readback value
 - Analog output 1 to n (1659–1 to n) 195
 - Discrete output 1 to n (1713–1 to n) 207
- Received signal strength (2721) 166
- Reference density (1852) 48
- Reference density factor (1869) 90
- Reference density offset (1868) 90
- Reference density unit (0556) 66
- Reference sound velocity (6147) 78
- Reference temperature (1816) 83
- Relay output 1 to n simulation (0802–1 to n) ... 271
- Relay output function
 - Relay output 1 to n (0804–1 to n) 138
- Reset access code (0024) 42
- Reset min/max values (6151) 243
- Response time
 - Current output 1 to n (0378–1 to n) 112
 - Pulse/frequency/switch output 1 to n (0491–1 to n) 127
- Response time part. filled pipe detect. (1859) ... 75
- Response time status input
 - Status input 1 to n (1354–1 to n) 100
- Security identification (2718) 162
- Select antenna (2713) 165
- Select gas type (6074) 77
- Select medium (6062) 77
- Separator (0101) 27
- Serial number (0009) 235
- Serial number (1481) 152
- Set point status
 - Analog output 1 to n (1660–1 to n) 189
 - Discrete output 1 to n (1714–1 to n) 201
- Set point value
 - Analog output 1 to n (1661–1 to n) 189
 - Discrete output 1 to n (1715–1 to n) 201
- Setpoint deviation
 - Analog output 1 to n (1653–1 to n) 198
- Signal mode
 - Current input 1 to n (1610–1 to n) 96
 - Current output 1 to n (0377–1 to n) 102
 - Pulse/frequency/switch output 1 to n (0490–1 to n) 117
- Simulate enabled
 - Analog input 1 to n (1556–1 to n) 179
 - Analog output 1 to n (1662–1 to n) 198
 - Discrete input 1 to n (2196–1 to n) 187
 - Discrete output 1 to n (1716–1 to n) 209

- Simulate status
 - Analog input 1 to n (1557-1 to n) 180
 - Analog output 1 to n (1663-1 to n) 199
 - Discrete input 1 to n (2197-1 to n) 188
 - Discrete output 1 to n (1717-1 to n) 210
- Simulate value
 - Analog input 1 to n (1558-1 to n) 180
 - Analog output 1 to n (1664-1 to n) 198
 - Discrete input 1 to n (2198-1 to n) 187
 - Discrete output 1 to n (1718-1 to n) 210
- Software option overview (0015) 45
- Software revision
 - I/O module (0072) 240, 241
- Software revision (0072) 238, 239, 242
- Software revision (1478) 151
- Square expansion coefficient (1818) 84
- SSID name (2707) 164
- SSID name (2714) 161
- Static revision
 - Analog input 1 to n (1560-1 to n) 170
 - Analog output 1 to n (1666-1 to n) 191
 - Discrete input 1 to n (2200-1 to n) 184
 - Discrete output 1 to n (1720-1 to n) 204
 - Totalizer 1 to n (3832-1 to n) 216
- Static revision (1495) 148
- Status input simulation (1355) 266
- Status PROFIBUS Master Config (1465) 146
- Strategy
 - Analog input 1 to n (1559-1 to n) 170
 - Analog output 1 to n (1665-1 to n) 192
 - Discrete input 1 to n (2199-1 to n) 184
 - Discrete output 1 to n (1719-1 to n) 204
 - Totalizer 1 to n (3831-1 to n) 217
- Strategy (1494) 149
- Subnet mask (7211) 158
- Switch cycles
 - Relay output 1 to n (0815-1 to n) 60
- Switch output function
 - Pulse/frequency/switch output 1 to n (0481-1 to n) 130
- Switch output simulation 1 to n (0462-1 to n) .. 270
- Switch status
 - Relay output 1 to n (0801-1 to n) 59, 143
- Switch status 1 to n (0461-1 to n) 59, 136
- Switch status 1 to n (0463-1 to n) 271
- Switch status 1 to n (0803-1 to n) 272
- Switch-off delay
 - Pulse/frequency/switch output 1 to n (0465-1 to n) 135
 - Relay output 1 to n (0813-1 to n) 141
- Switch-off value
 - Pulse/frequency/switch output 1 to n (0464-1 to n) 133
 - Relay output 1 to n (0809-1 to n) 141
- Switch-on delay
 - Pulse/frequency/switch output 1 to n (0467-1 to n) 135
 - Relay output 1 to n (0814-1 to n) 142
- Switch-on value
 - Pulse/frequency/switch output 1 to n (0466-1 to n) 133
 - Relay output 1 to n (0810-1 to n) 141
- Tag description
 - Analog input 1 to n (1562-1 to n) 170
 - Analog output 1 to n (1667-1 to n) 191
 - Discrete input 1 to n (2201-1 to n) 183
 - Discrete output 1 to n (1721-1 to n) 203
 - Totalizer 1 to n (3833-1 to n) 216
- Target corrected volume flow (1893) 52
- Target mass flow (1864) 51
- Target mode
 - Analog input 1 to n (1563-1 to n) 171
 - Analog output 1 to n (1668-1 to n) 192
 - Discrete input 1 to n (2202-1 to n) 184
 - Discrete output 1 to n (1722-1 to n) 204
 - Totalizer 1 to n (3834-1 to n) 217
- Target mode (1497) 149
- Target volume flow (1895) 53
- Temp. compensated dynamic viscosity (1872) ... 50
- Temp. compensated kinematic viscosity (1863) ... 50
- Temperature (1853) 49
- Temperature coefficient sound velocity (6181) ... 78
- Temperature correction source (6184) 80
- Temperature damping (1822) 70
- Temperature factor (1871) 91
- Temperature offset (1870) 91
- Temperature unit (0557) 66
- Terminal number
 - Current input 1 to n (1611-1 to n) 96
 - Current output 1 to n (0379-1 to n) 101
 - Pulse/frequency/switch output 1 to n (0492-1 to n) 116
 - Relay output 1 to n (0812-1 to n) 137
 - Status input 1 to n (1358-1 to n) 99
- Timestamp 226, 227, 228, 229, 230, 231, 232
- Totalizer operation mode
 - Totalizer 1 to n (3823-1 to n) 214
- Totalizer status (Hex) 1 to n (3825-1 to n) .. 54, 216
- Totalizer status 1 to n (3826-1 to n) 55, 216
- Totalizer value 1 to n (3827-1 to n) 54, 215
- Unit totalizer
 - Totalizer 1 to n (3835-1 to n) 212
- User name (2715) 162
- Value 1 display (0107) 18
- Value 2 display (0108) 21
- Value 3 display (0110) 22
- Value 4 display (0109) 23
- Value current input 1 to n (1609-1 to n) 267
- Value current output 1 to n (0355-1 to n) 268
- Value per pulse
 - Pulse/frequency/switch output 1 to n (0455-1 to n) 119
- Value status input
 - Status input 1 to n (1353-1 to n) 100
 - Value status input 1 to n (1353-1 to n) 56
- Volume flow (1847) 47
- Volume flow factor (1846) 88

Volume flow offset (1841)	88
Volume flow unit (0553)	62
Volume unit (0563)	63
Web server functionality (7222)	159
Web server language (7221)	157
WLAN (2702)	161
WLAN IP address (2711)	163
WLAN MAC address (2703)	163
WLAN mode (2717)	161
WLAN passphrase (2706)	164
WLAN password (2716)	163
WLAN subnet mask (2709)	163
Zero point (6195)	92
Zero point adjustment control (6196)	86
Direct access (Parameter)	11
Discrete input 1 to n (Submenu)	181
Discrete inputs (Submenu)	181
Discrete output 1 to n (Submenu)	200
Discrete outputs (Submenu)	200
Display (Submenu)	14
Display channel 1 (Submenu)	260
Display channel 2 (Submenu)	262
Display channel 3 (Submenu)	262
Display channel 4 (Submenu)	263
Display damping (Parameter)	25
Display interval (Parameter)	24
Display language (Parameter)	15
Display module (Submenu)	242
Document	
Explanation of the structure of a parameter	
description	6
Function	4
Structure	4
Symbols used	6
Target group	4
Using the document	4
Document function	4
Dynamic viscosity (Parameter)	49
E	
ENP version (Parameter)	237
Enter access code (Parameter)	13
Entire logging duration (Parameter)	260
Event list (Submenu)	233
Event logbook (Submenu)	232
Extended order code 1 (Parameter)	237
Extended order code 2 (Parameter)	237
Extended order code 3 (Parameter)	237
External compensation (Submenu)	78
External pressure (Parameter)	80
External reference density (Parameter)	82
External temperature (Parameter)	81
F	
Factory reset (Parameter)	154
Factory settings	274
SI units	274
US units	276
Fail safe time (Parameter)	189, 201

Fail safe type (Parameter)	168, 182, 190, 202
Fail-safe value (Parameter)	169, 182, 190, 202
Failure current (Parameter)	114
Failure frequency (Parameter)	129
Failure mode (Parameter) 98, 113, 121, 128, 135,	
142,	215
Failure value (Parameter)	98
Feature enabled (Parameter)	156
Feature supported (Parameter)	156
Filter options (Parameter)	232, 233
Firmware version (Parameter)	236
Fixed current (Parameter)	104
Fixed reference density (Parameter)	82
Flow damping (Parameter)	69
Flow override (Parameter)	70
Format display (Parameter)	15
Frequency output simulation 1 to n (Parameter)	268
Frequency value 1 to n (Parameter)	269
Function	
see Parameter	

G

Gateway IP address (Parameter)	166
--	-----

H

Hardware lock (Parameter)	155
Hardware revision (Parameter)	151
Header (Parameter)	25
Header text (Parameter)	26
Heartbeat (Submenu)	263
Hi alarm state (Parameter)	178, 223
Hi alarm value (Parameter)	178, 223
Hi Hi alarm state (Parameter)	178, 222
Hi Hi alarm value (Parameter)	177, 222
Hi Hi Lim (Parameter)	176, 220
Hi Lim (Parameter)	176, 221
High value partial filled pipe detection (Parameter)	75

I

I/O configuration (Submenu)	93
I/O module 1 (Submenu)	240
I/O module 1 terminal numbers (Parameter)	240
I/O module 1 to n information (Parameter)	93
I/O module 1 to n terminal numbers (Parameter)	93
I/O module 1 to n type (Parameter)	94
I/O module 2 (Submenu)	240
I/O module 2 terminal numbers (Parameter)	241
Ident number selector (Parameter)	145, 155
Increase close (Parameter)	199
Input (Submenu)	95
Input channel (Parameter)	196, 208
Input signal level (Parameter)	266
Input values (Submenu)	55
Installation angle pitch (Parameter)	85
Installation angle roll (Parameter)	85
Installation direction (Parameter)	84
Invert (Parameter)	182, 201
Invert output signal (Parameter)	136
IP address (Parameter)	158

IP address domain name server (Parameter) 166

K

Kinematic viscosity (Parameter) 50

L

Last backup (Parameter) 28
 Lin type (Parameter) 175
 Linear expansion coefficient (Parameter) 83
 Lo alarm state (Parameter) 179, 223
 Lo alarm value (Parameter) 178, 223
 Lo Lim (Parameter) 177, 221
 Lo Lo alarm state (Parameter) 179, 224
 Lo Lo alarm value (Parameter) 179, 224
 Lo Lo Lim (Parameter) 177, 222
 Locking status (Parameter) 12
 Logging delay (Parameter) 259
 Logging interval (Parameter) 257
 Login page (Parameter) 159
 Low flow cut off (Submenu) 71
 Low value partial filled pipe detection (Parameter) . . . 74

M

MAC address (Parameter) 157
 Main electronic module + I/O module 1 (Submenu) . . 238
 Main electronic temperature (Submenu) 244
 Manufacturer ID (Parameter) 151
 Mass flow (Parameter) 47
 Mass flow factor (Parameter) 88
 Mass flow offset (Parameter) 87
 Mass flow unit (Parameter) 61
 Mass unit (Parameter) 61
 Master availability (Parameter) 147
 Max. switch cycles number (Parameter) 60
 Maximum damping partial filled pipe det.
 (Parameter) 76
 Maximum frequency value (Parameter) 124
 Maximum value (Parameter) 244, 245, 246, 247,
 248, 249, 250, 251, 252, 253
 Measured current 1 to n (Parameter) 56, 57, 115
 Measured values (Submenu) 46
 Measured values 1 to n (Parameter) 55
 Measurement mode (Submenu) 76
 Measuring mode (Parameter) 107, 121, 125
 Measuring value at maximum frequency (Parameter)
 125
 Measuring value at minimum frequency (Parameter)
 124
 Medium temperature (Submenu) 246
 Min/max values (Submenu) 243
 Minimum frequency value (Parameter) 124
 Minimum value (Parameter) 244, 245, 246, 247,
 248, 249, 250, 251, 252, 253
 Mode block actual (Parameter) 149, 171, 185, 192,
 205, 217
 Mode block normal (Parameter) 150, 172, 185, 193,
 205, 218
 Mode block permitted (Parameter) 150, 172, 185,
 193, 205, 218

N

Network security (Parameter) 162
 Nominal diameter (Parameter) 92

O

Off value low flow cutoff (Parameter) 72
 On value low flow cutoff (Parameter) 71
 Operating mode (Parameter) 117
 Operating time (Parameter) 28, 42, 227
 Operating time from restart (Parameter) 227
 Order code (Parameter) 236
 Oscillation amplitude (Submenu) 249
 Oscillation damping (Submenu) 251
 Oscillation frequency (Submenu) 248
 Out decimal point (Parameter) 175
 Out scale lower range (Parameter) 174, 200
 Out scale upper range (Parameter) 174, 199
 Out status (Parameter) 169, 170, 183, 191, 203
 Out unit (Parameter) 175
 Out unit text (Parameter) 180
 Out value (Parameter) 169, 183, 190, 203
 Output (Submenu) 100
 Output channel (Parameter) 197, 208
 Output current 1 to n (Parameter) 57, 115
 Output frequency 1 to n (Parameter) 58, 129
 Output values (Submenu) 56

P

Parameter

Structure of a parameter description 6
 Partially filled pipe detection (Submenu) 74
 Petroleum (Submenu) 224
 Physical block (Submenu) 147
 Position status (Parameter) 198
 Position value (Parameter) 197
 Powerless relay status (Parameter) 143
 Preset value 1 to n (Parameter) 214
 Pressure compensation (Parameter) 79
 Pressure shock suppression (Parameter) 72
 Pressure unit (Parameter) 67
 Pressure value (Parameter) 49, 79
 Previous diagnostics (Parameter) 226
 Process parameters (Submenu) 68
 Process variable adjustment (Submenu) 87
 Process variable value (Parameter) 265
 Process variables (Submenu) 46
 PROFIBUS ident number (Parameter) 146
 PROFIBUS PA configuration (Submenu) 144
 PROFIBUS PA info (Submenu) 145
 Profile version (Parameter) 146
 Progress (Parameter) 87
 Pulse output 1 to n (Parameter) 58, 122
 Pulse output simulation 1 to n (Parameter) 269
 Pulse value 1 to n (Parameter) 270
 Pulse width (Parameter) 120
 Pulse/frequency/switch output 1 to n (Submenu) 57,
 115
 PV filter time (Parameter) 168
 PV scale lower range (Parameter) 174, 195

PV scale upper range (Parameter) 174, 195

R

RCAS in status (Parameter) 196, 208
 RCAS in value (Parameter) 196, 208
 RCAS out status (Parameter) 197, 209
 RCAS out value (Parameter) 197, 209
 Readback status (Parameter) 196, 207
 Readback value (Parameter) 195, 207
 Received signal strength (Parameter) 166
 Reference density (Parameter) 48
 Reference density factor (Parameter) 90
 Reference density offset (Parameter) 90
 Reference density unit (Parameter) 66
 Reference sound velocity (Parameter) 78
 Reference temperature (Parameter) 83
 Relay output 1 to n (Submenu) 59, 137
 Relay output 1 to n simulation (Parameter) 271
 Relay output function (Parameter) 138
 Reset access code (Parameter) 42
 Reset access code (Submenu) 42
 Reset min/max values (Parameter) 243
 Response time (Parameter) 112, 127
 Response time part. filled pipe detect. (Parameter) . . . 75
 Response time status input (Parameter) 100

S

Security identification (Parameter) 162
 Select antenna (Parameter) 165
 Select gas type (Parameter) 77
 Select medium (Parameter) 77
 Sensor (Submenu) 45
 Sensor adjustment (Submenu) 84
 Sensor electronic module (ISEM) (Submenu) 239
 Sensor electronic temperature (ISEM) (Submenu) . . . 245
 Separator (Parameter) 27
 Serial number (Parameter) 152, 235
 Set point status (Parameter) 189, 201
 Set point value (Parameter) 189, 201
 Setpoint deviation (Parameter) 198
 Signal asymmetry (Submenu) 252
 Signal mode (Parameter) 96, 102, 117
 Simulate enabled (Parameter) 179, 187, 198, 209
 Simulate status (Parameter) 180, 188, 199, 210
 Simulate value (Parameter) 180, 187, 198, 210
 Simulation (Submenu) 263
 Software option overview (Parameter) 45
 Software revision (Parameter) 151, 238, 239, 240, 241, 242
 Square expansion coefficient (Parameter) 84
 SSID name (Parameter) 161, 164
 Static revision (Parameter) 148, 170, 184, 191, 204, 216
 Status input 1 to n (Submenu) 98
 Status input simulation (Parameter) 266
 Status PROFIBUS Master Config (Parameter) 146
 Strategy (Parameter) 149, 170, 184, 192, 204, 217
 Submenu
 Administration 40

Analog input 1 to n 167
 Analog inputs 166
 Analog output 1 to n 188
 Analog outputs 188
 Application 210
 Calculated values 81
 Calibration 91
 Carrier pipe temperature 246
 Communication 143
 Concentration 224
 Configuration backup 28
 Corrected volume flow calculation 81
 Current input 1 to n 55, 95
 Current output 1 to n 101
 Data logging 254
 Device information 234
 Diagnostic behavior 31
 Diagnostic handling 31
 Diagnostic list 228
 Diagnostics 225
 Discrete input 1 to n 181
 Discrete inputs 181
 Discrete output 1 to n 200
 Discrete outputs 200
 Display 14
 Display channel 1 260
 Display channel 2 262
 Display channel 3 262
 Display channel 4 263
 Display module 242
 Event list 233
 Event logbook 232
 External compensation 78
 Heartbeat 263
 I/O configuration 93
 I/O module 1 240
 I/O module 2 240
 Input 95
 Input values 55
 Low flow cut off 71
 Main electronic module + I/O module 1 238
 Main electronic temperature 244
 Measured values 46
 Measurement mode 76
 Medium temperature 246
 Min/max values 243
 Oscillation amplitude 249
 Oscillation damping 251
 Oscillation frequency 248
 Output 100
 Output values 56
 Partially filled pipe detection 74
 Petroleum 224
 Physical block 147
 Process parameters 68
 Process variable adjustment 87
 Process variables 46
 PROFIBUS PA configuration 144
 PROFIBUS PA info 145

Pulse/frequency/switch output 1 to n 57, 115
 Relay output 1 to n 59, 137
 Reset access code 42
 Sensor 45
 Sensor adjustment 84
 Sensor electronic module (ISEM) 239
 Sensor electronic temperature (ISEM) 245
 Signal asymmetry 252
 Simulation 263
 Status input 1 to n 98
 System 13
 System units 60
 Torsion oscillation amplitude 250
 Torsion oscillation damping 251
 Torsion oscillation frequency 248
 Torsion signal asymmetry 253
 Totalizer 54
 Totalizer 1 to n 211
 Value current output 1 to n 57
 Value status input 1 to n 56
 Viscosity 224
 Web server 156
 WLAN settings 160
 Zero point adjustment 86
 Subnet mask (Parameter) 158
 Switch cycles (Parameter) 60
 Switch output function (Parameter) 130
 Switch output simulation 1 to n (Parameter) 270
 Switch status (Parameter) 59, 143
 Switch status 1 to n (Parameter) 59, 136, 271, 272
 Switch-off delay (Parameter) 135, 141
 Switch-off value (Parameter) 133, 141
 Switch-on delay (Parameter) 135, 142
 Switch-on value (Parameter) 133, 141
 System (Submenu) 13
 System units (Submenu) 60

T

Tag description (Parameter) . . . 170, 183, 191, 203, 216
 Target corrected volume flow (Parameter) 52
 Target group 4
 Target mass flow (Parameter) 51
 Target mode (Parameter) . . . 149, 171, 184, 192, 204, 217
 Target volume flow (Parameter) 53
 Temp. compensated dynamic viscosity (Parameter) . . 50
 Temp. compensated kinematic viscosity (Parameter) . 50
 Temperature (Parameter) 49
 Temperature coefficient sound velocity (Parameter) . . 78
 Temperature correction source (Parameter) 80
 Temperature damping (Parameter) 70
 Temperature factor (Parameter) 91
 Temperature offset (Parameter) 91
 Temperature unit (Parameter) 66
 Terminal number (Parameter) . . . 96, 99, 101, 116, 137
 Timestamp (Parameter) . . . 226, 227, 228, 229, 230, 231, 232
 Torsion oscillation amplitude (Submenu) 250
 Torsion oscillation damping (Submenu) 251
 Torsion oscillation frequency (Submenu) 248

Torsion signal asymmetry (Submenu) 253
 Totalizer (Submenu) 54
 Totalizer 1 to n (Submenu) 211
 Totalizer operation mode (Parameter) 214
 Totalizer status (Hex) 1 to n (Parameter) 54, 216
 Totalizer status 1 to n (Parameter) 55, 216
 Totalizer value 1 to n (Parameter) 54, 215

U

Unit totalizer (Parameter) 212
 User name (Parameter) 162

V

Value 1 display (Parameter) 18
 Value 2 display (Parameter) 21
 Value 3 display (Parameter) 22
 Value 4 display (Parameter) 23
 Value current input 1 to n (Parameter) 267
 Value current output 1 to n (Parameter) 268
 Value current output 1 to n (Submenu) 57
 Value per pulse (Parameter) 119
 Value status input (Parameter) 56, 100
 Value status input 1 to n (Submenu) 56
 Viscosity (Submenu) 224
 Volume flow (Parameter) 47
 Volume flow factor (Parameter) 88
 Volume flow offset (Parameter) 88
 Volume flow unit (Parameter) 62
 Volume unit (Parameter) 63

W

Web server (Submenu) 156
 Web server functionality (Parameter) 159
 Web server language (Parameter) 157
 Wizard
 Define access code 41
 WLAN (Parameter) 161
 WLAN IP address (Parameter) 163
 WLAN MAC address (Parameter) 163
 WLAN mode (Parameter) 161
 WLAN passphrase (Parameter) 164
 WLAN password (Parameter) 163
 WLAN settings (Submenu) 160
 WLAN subnet mask (Parameter) 163

Z

Zero point (Parameter) 92
 Zero point adjustment (Submenu) 86
 Zero point adjustment control (Parameter) 86

www.addresses.endress.com
