

Description of Device Parameters

Proline Promag 300

PROFIBUS PA

Electromagnetic flowmeter

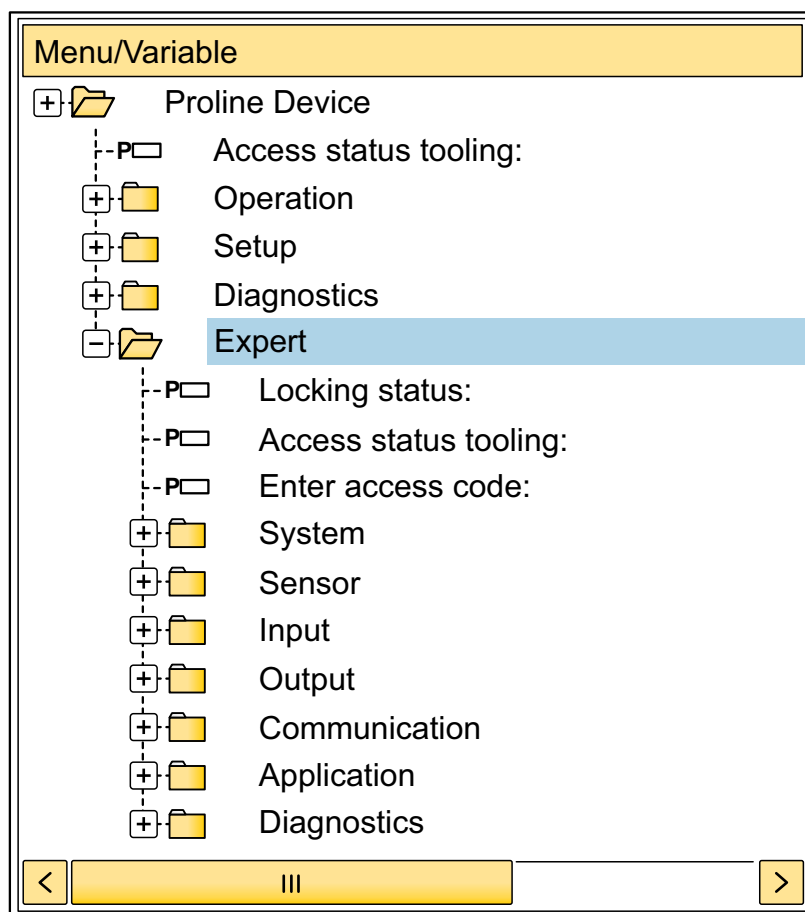


Table of contents

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	27		
3.1.3	"Diagn. handling" submenu	30		
3.1.4	"Administration" submenu	38		
3.2	"Sensor" submenu	43		
3.2.1	"Measured values" submenu	43		
3.2.2	"System units" submenu	53		
3.2.3	"Process param." submenu	60		
3.2.4	"External comp." submenu	73		
3.2.5	"Sensor adjustment" submenu	78		
3.2.6	"Calibration" submenu	85		
3.3	"I/O configuration" submenu	86		
3.4	"Input" submenu	88		
3.4.1	"Current input 1 to n" submenu	88		
3.4.2	"Status input 1 to n" submenu	92		
3.5	"Output" submenu	94		
3.5.1	"Current output 1 to n" submenu	94		
3.5.2	"Pulse/frequency/switch output 1 to n" submenu	107		
3.5.3	"Relay output 1 to n" submenu	126		
3.6	"Communication" submenu	133		
3.6.1	"PROFIBUS PA conf" submenu	133		
3.6.2	"PROFIBUS PA info" submenu	135		
3.6.3	"Physical block" submenu	136		
3.6.4	"Web server" submenu	146		
3.6.5	"WLAN settings" submenu	149		
3.7	"Analog inputs" submenu	156		
3.7.1	"Analog input 1 to n" submenu	156		
3.8	"Discrete inputs" submenu	169		
3.8.1	"Discrete input 1 to n" submenu	169		
3.9	"Analog outputs" submenu	176		
3.9.1	"Analog output 1 to n" submenu	176		
3.10	"Discrete outputs" submenu	188		
3.10.1	"Discrete output 1 to n" submenu	188		
3.11	"Application" submenu	198		
3.11.1	"Totalizer 1 to n" submenu	199		
3.12	"Diagnostics" submenu	212		
3.12.1	"Diagnostic list" submenu	215		
3.12.2	"Event logbook" submenu	219		
3.12.3	"Device info" submenu	221		
3.12.4	"Main elec.+I/O1" submenu	225		
3.12.5	"Sens. electronic" submenu	226		
3.12.6	"I/O module 1" submenu	227		
3.12.7	"I/O module 2" submenu	227		
3.12.8	"Display module" submenu	229		
3.12.9	"Data logging" submenu	230		
3.12.10	"Min/max val." submenu	237		
3.12.11	"Heartbeat" submenu	240		
3.12.12	"Simulation" submenu	240		
4	Country-specific factory settings	250		
4.1	SI units	250		
4.1.1	System units	250		
4.1.2	Full scale values	250		
4.1.3	Output current span	251		
4.1.4	Pulse value	251		
4.1.5	On value low flow cut off	251		
4.2	US units	252		
4.2.1	System units	252		
4.2.2	Full scale values	252		
4.2.3	Output current span	253		
4.2.4	Pulse value	253		
4.2.5	On value low flow cut off	254		
5	Explanation of abbreviated units	255		
5.1	SI units	255		
5.2	US units	255		
5.3	Imperial units	256		
	Index	257		

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

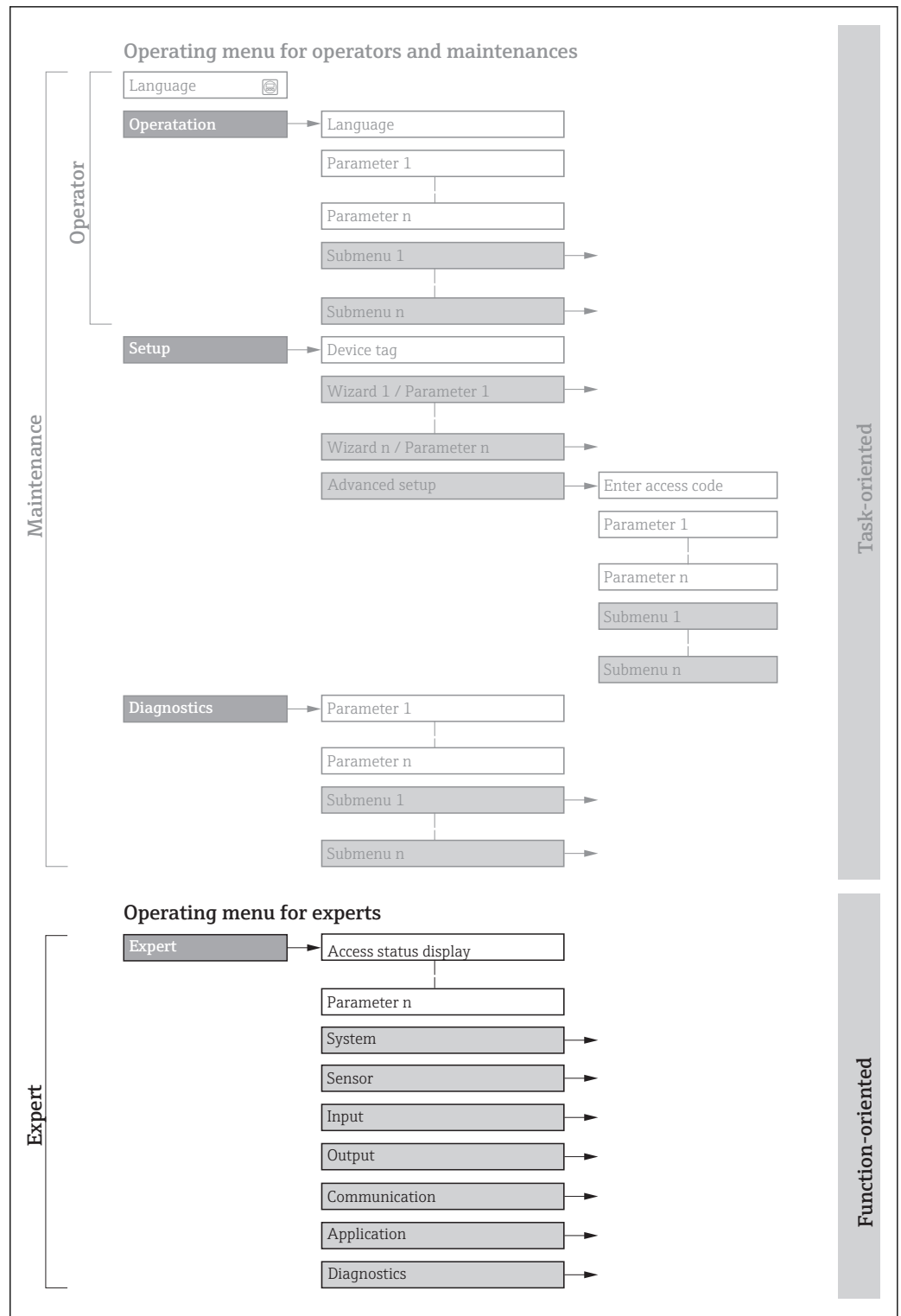
1.2 Target group

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
Promag H 300	BA01396D
Promag P 300	BA01397D

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
Remote display and operating module DKX001	SD01763D

Contents	Documentation code
Heartbeat Technology	SD01744D
Web server	SD01656D

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	→ 	27
▶ Diagn. handling	→ 	30
▶ Administration	→ 	38
▶ Sensor	→ 	43
▶ Measured val.	→ 	43
▶ System units	→ 	53
▶ Process param.	→ 	60
▶ External comp.	→ 	73
▶ Sensor adjustm.	→ 	78
▶ Calibration	→ 	85
▶ I/O config.	→ 	86
I/O 1 to n terminals (3902-1 to n)	→ 	86
I/O 1 to n info (3906-1 to n)	→ 	87
I/O 1 to n type (3901-1 to n)	→ 	87

Apply I/O config (3907)	→ 88
Alteration code (2762)	→ 88
► Input	→ 88
► Current input 1 to n	→ 88
► Status input 1 to n	→ 92
► Output	→ 94
► Curr.output 1 to n	→ 94
► PFS output 1 to n	→ 107
► Relay output 1 to n	→ 126
► Communication	→ 133
► PROFIBUS PA conf	→ 133
► PROFIBUS PA info	→ 135
► Physical block	→ 136
► Web server	→ 146
► WLAN settings	→ 149
► Analog inputs	→ 156
► Analog input 1 to n	→ 156
► Discrete inputs	→ 169
► Discrete input 1 to n	→ 169
► Analog outputs	→ 176
► Analog output 1 to n	→ 176
► Discrete outputs	→ 188
► Discr. out. 1 to n	→ 188

► Application	→ 198
► Totalizer 1 to n	→ 199
► Diagnostics	→ 212
Actual diagnos. (0691)	→ 212
Prev.diagnostics (0690)	→ 213
Time fr. restart (0653)	→ 214
Operating time (0652)	→ 214
► Diagnostic list	→ 215
► Event logbook	→ 219
► Device info	→ 221
► Mainboard module	→ 225
► Sens. electronic	→ 226
► I/O module 1	→ 227
► I/O module 2	→ 227
► Display module	→ 229
► Min/max val.	→ 237
► Data logging	→ 230
► Heartbeat	→ 240
► Simulation	→ 240

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	→ 📄	43
▶ I/O config.	→ 📄	86
▶ Input	→ 📄	88
▶ Output	→ 📄	94
▶ Communication	→ 📄	133
▶ Analog inputs	→ 📄	156
▶ Discrete inputs	→ 📄	169
▶ Analog outputs	→ 📄	176
▶ Discrete outputs	→ 📄	188
▶ Application	→ 📄	198
▶ Diagnostics	→ 📄	212

Direct access

🏠

Navigation  Expert → Direct access (0106)

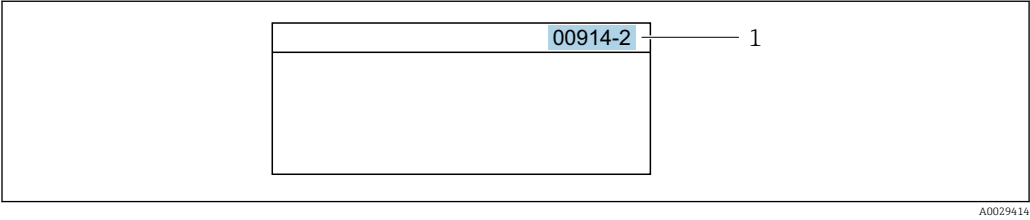
Description Use this function to enter the access code to enable direct access to the desired parameter via the local display. A parameter number is assigned to each parameter for this purpose.

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	→  27
► Diagn. handling	→  30
► Administration	→  38

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

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*

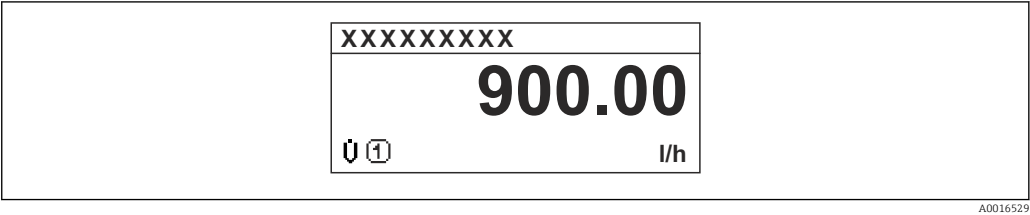
The display format (size, bar graph etc.) and number of measured values displayed simultaneously (1 to 4) can be configured. This setting only applies to normal operation.



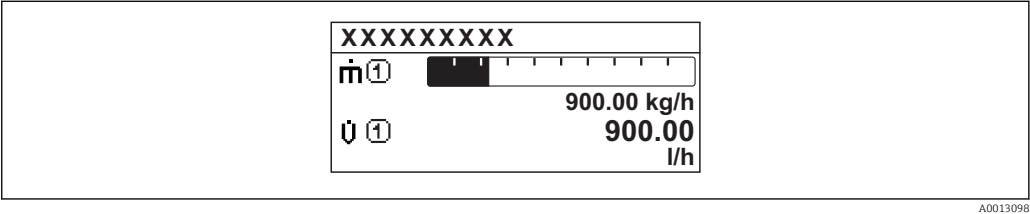
- The **Value 1 display** parameter (→ 18) to **Value 4 display** parameter (→ 22) are used to specify which measured values are shown on the local display and in what order.
- If more measured values are specified than the display mode selected permits, then the values alternate on the device display. The display time until the next change is configured via the **Display interval** parameter (→ 23).

Possible measured values shown on the local display:

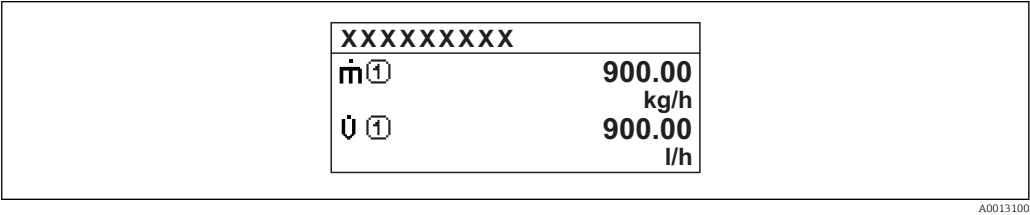
"1 value, max." option



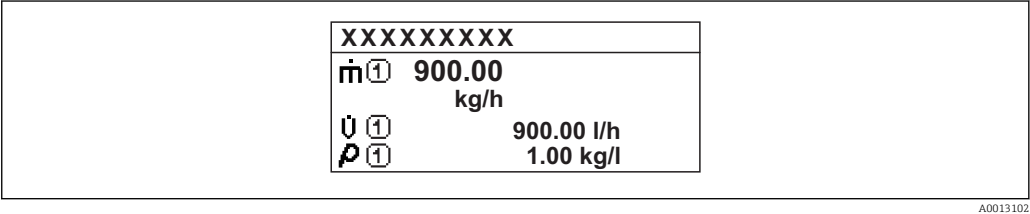
"Bagr. + 1 value" option



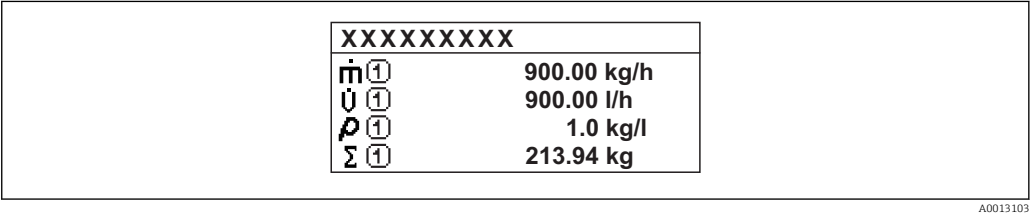
"2 values" option



"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	■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Flow velocity ■ Conductivity* ■ CorrConductivity* ■ Totalizer 1 ■ Totalizer 2 ■ Totalizer 3 ■ Curr.output 1* ■ Temperature* ■ Electronic temp.
Factory setting	Volume flow
Additional information	<i>Description</i> 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. <i>Dependency</i>  The unit of the displayed measured value is taken from the System units submenu (→  53).
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 l/h ■ 0 gal/min (us)

* Visibility depends on order options or device settings

Additional information*Description*

The **Format display** parameter (→ 15) is used to specify that the measured value is to be displayed as a bar graph.

User entry

The unit of the displayed measured value is taken from the **System units** submenu (→ 53).

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 → 250

Additional information*Description*

The **Format display** parameter (→ 15) is used to specify that the measured value is to be displayed as a bar graph.

User entry

The unit of the displayed measured value is taken from the **System units** submenu (→ 53).

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 (→  53).

Decimal places 2**Navigation**

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

Prerequisite

A measured value is specified in the **Value 2 display** parameter (→  20).

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 (→ 53).

0% bargraph 3



Navigation	Expert → System → Display → 0% bargraph 3 (0124)
Prerequisite	A selection was made in the Value 3 display parameter (→ 21).
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 l/h ■ 0 gal/min (us)
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 (→ 53).

100% bargraph 3

Navigation	 Expert → System → Display → 100% bargraph 3 (0126)
Prerequisite	A selection was made in the Value 3 display parameter (→  21).
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 (→  53).

Decimal places 3

Navigation	 Expert → System → Display → Decimal places 3 (0118)
Prerequisite	A measured value is specified in the Value 3 display parameter (→  21).
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 (→  53).

Decimal places 4

Navigation	  Expert → System → Display → Decimal places 4 (0119)
Prerequisite	A measured value is specified in the Value 4 display parameter (→  22).
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 (→ 22) 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

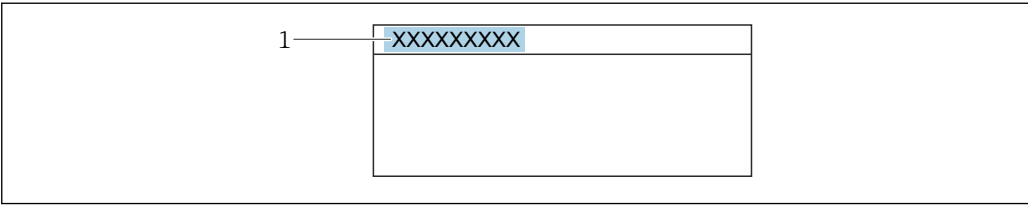
- Device tag
- Free text

Factory setting Device tag

1) proportional transmission behavior with first order delay

Additional information

Description
The header text only appears during normal operation.



A0029422

1 Position of the header text on the display

- Selection*
- Device tag
Is defined in the **Device tag** parameter (→  222).
 - Free text
Is defined in the **Header text** parameter (→  25).

Header text



Navigation  Expert → System → Display → Header text (0112)

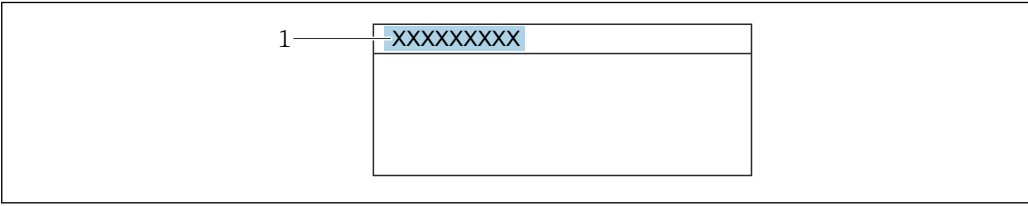
Prerequisite In the **Header** parameter (→  24), the **Free text** option is selected.

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.



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"
- Order code for "Display; operation", option **O** "Separate 4-line display, illum.; 10m/30ft cable; touch control"

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	→ 	27
Last backup	→ 	27
Config. managem.	→ 	27
Backup state	→ 	28
Compar. result	→ 	29

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 (→  27).

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)

→  30

► Diagn. behavior

→  30

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:

- 170 coil resistance
- 832 Electronic temp.
- 833 Electronic temp.
- 834 Process temp.
- 835 Process temp.
- 962 empty pipe

"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 (→  30).

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.

Diagnostic behavior	Description
Logbook only	The device continues to measure. The diagnostic message is displayed only in the Event logbook submenu (→  219) (Event list submenu (→  220)) 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. 043 (0650)	→  32
Diagnostic no. 302 (0739)	→  32
Diagnostic no. 376 (0645)	→  32
Diagnostic no. 377 (0777)	→  33
Diagnostic no. 441 (0657)	→  33
Diagnostic no. 442 (0658)	→  33
Diagnostic no. 443 (0659)	→  34
Diagnostic no. 444 (0740)	→  34
Diagnostic no. 531 (0741)	→  34
Diagnostic no. 832 (0681)	→  35
Diagnostic no. 833 (0682)	→  35
Diagnostic no. 834 (0700)	→  36
Diagnostic no. 835 (0702)	→  36
Diagnostic no. 842 (0638)	→  36
Diagnostic no. 962 (0745)	→  38
Diagnostic no. 937 (0743)	→  37
Diagnostic no. 938 (0642)	→  37
Diagnostic no. 961 (0736)	→  37

Diagnostic no. 043 (Sens.short circ.)		
Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 043 (0650)	
Description	Option for changing the diagnostic behavior of the diagnostic message 043 Sens.short circ..	
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. 376 (Sensor electron.)		
Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 376 (0645)	
Description	Option for changing the diagnostic behavior of the diagnostic message 376 Sensor electron..	
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only	
Factory setting	Warning	
Additional information	 Detailed description of the options available for selection:	

Diagnostic no. 377 (Sensor electron.) 	
Navigation	  Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 377 (0777)
Description	Option for changing the diagnostic behavior of the diagnostic message 377 Sensor electron..
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only
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.

DescriptionOption 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. 531 (Empty pipe det.)**Navigation**

Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 531 (0741)

DescriptionOption for changing the diagnostic behavior of the diagnostic message **531 Empty pipe det..**

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. 937 (EMC interference)		
Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 937 (0743)	
Description	Option for changing the diagnostic behavior of the diagnostic message 937 EMC interference .	
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only	
Factory setting	Warning	
Additional information	 Detailed description of the options available for selection:	
Diagnostic no. 938 (EMC interference)		
Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 938 (0642)	
Description	Option for changing the diagnostic behavior of the diagnostic message 938 EMC interference .	
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only	
Factory setting	Alarm	
Additional information	 Detailed description of the options available for selection:	
Diagnostic no. 961		
Navigation	 Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 961 (0736)	
Description	Option for changing the diagnostic behavior of the diagnostic message 861 Process fluid .	
Selection	■ Off ■ Alarm ■ Warning ■ Logbook only	
Factory setting	Alarm	
Additional information	 Detailed description of the options available for selection:	

Diagnostic no. 962 (Pipe empty)



Navigation	Expert → System → Diagn. handling → Diagn. behavior → Diagnostic no. 962 (0745)
Description	Option for changing the diagnostic behavior of the diagnostic message 862 Pipe empty .
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	→ 38
► Reset acc. code	→ 40
Device reset (0000)	→ 41
Activate SW opt. (0029)	→ 41
SW option overv. (0015)	→ 42

"Def. access code" wizard

The **Def. access code** wizard (→ 38) 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	→ 39
Confirm code	→ 39

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)

→  40

Reset acc. code (0024)

→  40

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	<i>Description</i>  For a reset code, contact your Endress+Hauser service organization. <i>User entry</i> 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.

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	

* Visibility depends on order options or device settings

Additional information

Description

If a measuring device was ordered with an additional software option, the activation code is programmed in the device at the factory.

User entry

 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 (→  42).
- ↳ 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.

Example for a software option

Order code for "Application package", option **EA** "Extended HistoROM"

 The software options currently enabled are displayed in the **SW option overv.** parameter (→  42).

Web browser

 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 *
- ECC *
- HBT Monitoring *
- HBT Verification *

* Visibility depends on order options or device settings

Additional information

Description
Displays all the options that are available if ordered by the customer.

"Extend. HistoROM" option
Order code for "Application package", option **EA** "Extended HistoROM"

"ECC" option
Order code for "Application package", option **EC** "ECC electrode cleaning"

"HBT Verification" option and "HBT Monitoring" option
Order code for "Application package", option **EB** "Heartbeat Verification + Monitoring"

3.2 "Sensor" submenu

Navigation  Expert → Sensor

► Sensor		
► Measured val.	→ 	43
► System units	→ 	53
► Process param.	→ 	60
► External comp.	→ 	73
► Sensor adjustm.	→ 	78
► Calibration	→ 	85

3.2.1 "Measured values" submenu

Navigation  Expert → Sensor → Measured val.

► Measured val.		
► Process variab.	→ 	44
► Totalizer	→ 	46
► Input values	→ 	48
► Output values	→ 	49

"Process variables" submenu

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

► Process variab.		
Volume flow (1838)	→	 44
Mass flow (1847)	→	 44
Correct.vol.flow (1851)	→	 45
Flow velocity (1854)	→	 45
Conductivity (1850)	→	 45
CorrConductivity (1853)	→	 45
Temperature (1852)	→	 46
Density (1857)	→	 46

Volume flow

Navigation	 Expert → Sensor → Measured val. → Process variab. → Volume flow (1838)
Description	Displays the volume flow that is currently measured.
User interface	Signed floating-point number
Additional information	

Mass flow

Navigation	 Expert → Sensor → Measured val. → Process variab. → Mass flow (1847)
Description	Displays the mass flow currently calculated.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Mass flow unit parameter (→  57)

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 (→  58)

Flow velocity

Navigation	  Expert → Sensor → Measured val. → Process variab. → Flow velocity (1854)
Description	Displays the flow velocity currently calculated.
User interface	Signed floating-point number

Conductivity

Navigation	  Expert → Sensor → Measured val. → Process variab. → Conductivity (1850)
Description	Displays the conductivity currently measured.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Conductiv. unit parameter (→  55)

CorrConductivity

Navigation	  Expert → Sensor → Measured val. → Process variab. → CorrConductivity (1853)
Prerequisite	One of the following conditions is met: ■ Order code for "Sensor option", option CI "Medium temperature measurement" - or ■ The temperature is read into the flowmeter from an external device.
Description	Displays the conductivity currently corrected.
User interface	Positive floating-point number

Additional information	<i>Dependency</i>  The unit is taken from the Conductiv. unit parameter (→  55)
------------------------	---

Temperature

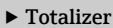
Navigation	  Expert → Sensor → Measured val. → Process variab. → Temperature (1852)
Prerequisite	One of the following conditions is met: ■ Order code for "Sensor option", option CI "Medium temperature measurement" or ■ The temperature is read into the flowmeter from an external device.
Description	Displays the temperature currently calculated.
User interface	Positive floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Temperature unit parameter (→  56)

Density

Navigation	  Expert → Sensor → Measured val. → Process variab. → Density (1857)
Description	Displays the current fixed density or density read in from an external device.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Density unit parameter (→  58)

"Totalizer" submenu

Navigation   Expert → Sensor → Measured val. → Totalizer

	
Totalizer val. 1 to n (0911-1 to n)	→  47
Tot. overflow 1 to n (0910-1 to n)	→  47

Totalizer val. 1 to n	
Navigation	 Expert → Sensor → Measured val. → Totalizer → Totalizer val. 1 to n (0911–1 to n)
Prerequisite	A process variable is selected in the Assign variable parameter of the Totalizer 1 to n submenu.
Description	Displays the current totalizer reading.
User interface	Signed floating-point number
Additional information	<i>Description</i> As it is only possible to display a maximum of 7 digits in the operating tool, the current counter value is the sum of the totalizer value and the overflow value from the Tot. overflow 1 to n parameter if the display range is exceeded.  In the event of an error, the totalizer adopts the mode defined in the Failure mode parameter. <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.  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  200). <i>Example</i> Calculation of the current totalizer reading when the value exceeds the 7-digit display range of the operating tool: ■ Value in the Totalizer val. 1 parameter: 1 968 457 m³ ■ Value in the Tot. overflow 1 parameter: $1 \cdot 10^7$ (1 overflow) = 10 000 000 [m³] ■ Current totalizer reading: 11 968 457 m³
Tot. overflow 1 to n	
Navigation	 Expert → Sensor → Measured val. → Totalizer → Tot. overflow 1 to n (0910–1 to n)
Prerequisite	A process variable is selected in the Assign variable parameter of the Totalizer 1 to n submenu.
Description	Displays the current totalizer overflow.
User interface	Integer with sign
Additional information	<i>Description</i> If the current totalizer reading exceeds 7 digits, which is the maximum value range that can be displayed by the operating tool, the value above this range is output as an overflow.

The current totalizer value is therefore the sum of the overflow value and the totalizer value from the **Totalizer val. 1 to n** parameter.

User interface

 The unit of the selected process variable is specified for the totalizer in the **Unit totalizer** parameter (→  200).

Example

Calculation of the current totalizer reading when the value exceeds the 7-digit display range of the operating tool:

- Value in the **Totalizer val. 1** parameter: 1 968 457 m³
- Value in the **Tot. overflow 1** parameter: 2 · 10⁷ (2 overflows) = 20 000 000 [m³]
- Current totalizer reading: 21 968 457 m³

"Input values" submenu

Navigation   Expert → Sensor → Measured val. → Input values

► Input values

► Current input 1 to n

→  48

► Val.stat.inp. 1 to n

→  49

"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)

→  48

Measur. curr. 1 to n (1604–1 to n)

→  49

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) →  49

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 →  50

► PFS output 1 to n →  50

► Relay output 1 to n →  52

"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)

→  50

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

→  50

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)

→  51

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

→  51

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

→  52

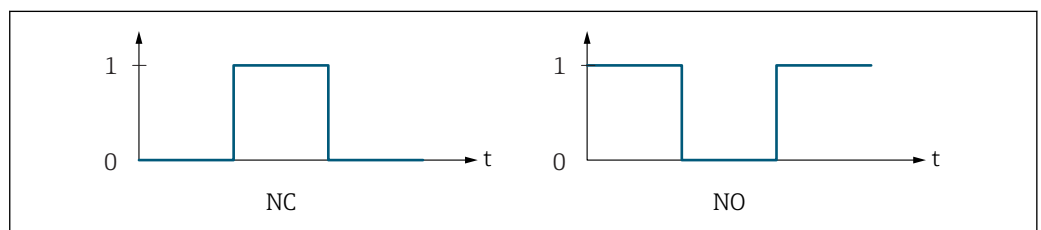
Output freq. 1 to n

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 (→  109), 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 (→  109) parameter.
Description	Displays the pulse frequency currently output.
User interface	Positive floating-point number
Additional information	<i>Description</i>

- 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 (→  126) 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 (→  113)) 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 (→  109).
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)

→  52

Switch cycles (0815–1 to n)

→  53

Max. cycles no. (0817–1 to n)

→  53

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		
Volume flow unit (0553)	→	 54
Volume unit (0563)	→	 55
Conductiv. unit (0582)	→	 55
Temperature unit (0557)	→	 56
Mass flow unit (0554)	→	 57
Mass unit (0574)	→	 57
Density unit (0555)	→	 58
Cor.volflow unit (0558)	→	 58
Corr. vol. unit (0575)	→	 59
Date/time format (2812)	→	 59

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

SI units

- cm³/s
- cm³/min
- cm³/h
- cm³/d
- dm³/s
- dm³/min
- dm³/h
- dm³/d
- m³/s
- m³/min
- m³/h
- m³/d
- ml/s
- ml/min
- ml/h
- ml/d
- l/s
- l/min
- l/h
- l/d
- hl/s
- hl/min
- hl/h
- hl/d
- Ml/s
- Ml/min
- Ml/h
- Ml/d

US units

- af/s
- af/min
- af/h
- af/d
- ft³/s
- ft³/min
- ft³/h
- ft³/d
- fl oz/s (us)
- fl oz/min (us)
- fl oz/h (us)
- fl oz/d (us)
- gal/s (us)
- gal/min (us)
- gal/h (us)
- gal/d (us)
- kgal/s (us)
- kgal/min (us)
- kgal/h (us)
- kgal/d (us)
- Mgal/s (us)
- Mgal/min (us)
- Mgal/h (us)
- Mgal/d (us)
- 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)
- bbl/s (us;oil)
- bbl/min (us;oil)
- bbl/h (us;oil)
- bbl/d (us;oil)
- bbl/s (us;tank)
- bbl/min (us;tank)
- bbl/h (us;tank)
- bbl/d (us;tank)

Imperial units

- gal/s (imp)
- gal/min (imp)
- gal/h (imp)
- gal/d (imp)
- Mgal/s (imp)
- Mgal/min (imp)
- Mgal/h (imp)
- Mgal/d (imp)
- bbl/s (imp;beer)
- bbl/min (imp;beer)
- bbl/h (imp;beer)
- bbl/d (imp;beer)
- bbl/s (imp;oil)
- bbl/min (imp;oil)
- bbl/h (imp;oil)
- bbl/d (imp;oil)

Factory setting

Country-specific:

- l/h
- gal/min (us)

Additional information*Result*

The selected unit applies for:
Volume flow parameter (→  44)

Selection

 For an explanation of the abbreviated units: →  255

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

Imperial units

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

Factory setting

Country-specific:

- m³
- gal (us)

Additional information*Selection*

 For an explanation of the abbreviated units: →  255

Conductiv. unit**Navigation**

 Expert → Sensor → System units → Conductiv. unit (0582)

Prerequisite

The **On** option is selected in the **Conduct. measur.** parameter (→  63) parameter.

Description

Use this function to select the unit for the conductivity.

Selection	<i>SI units</i> ■ nS/cm ■ µS/cm ■ µS/m ■ µS/mm ■ mS/m ■ mS/cm ■ S/cm ■ S/m ■ kS/m ■ MS/m
Factory setting	µS/cm
Additional information	<i>Effect</i> The selected unit applies for: ■ Conductivity parameter (→ ⓘ 45) ■ CorrConductivity parameter (→ ⓘ 45) <i>Selection</i>  For an explanation of the abbreviated units: → ⓘ 255

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: ■ Temperature parameter (→ ⓘ 46) ■ Maximum value parameter (→ ⓘ 239) ■ Minimum value parameter (→ ⓘ 238) ■ External temp. parameter (→ ⓘ 77) ■ Maximum value parameter (→ ⓘ 240) ■ Minimum value parameter (→ ⓘ 239) <i>Selection</i>  For an explanation of the abbreviated units: → ⓘ 255	

**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	■ oz/s
	■ g/min	■ oz/min
	■ g/h	■ oz/h
	■ g/d	■ oz/d
	■ kg/s	■ lb/s
	■ kg/min	■ lb/min
	■ kg/h	■ lb/h
	■ kg/d	■ lb/d
	■ t/s	■ STon/s
	■ t/min	■ STon/min
	■ t/h	■ STon/h
	■ t/d	■ STon/d

Factory setting Country-specific:
 ■ kg/h
 ■ lb/min

Additional information *Result*
 The selected unit applies for:
Mass flow parameter (→  44)

Selection



For an explanation of the abbreviated units: →  255

**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	■ oz
	■ kg	■ lb
	■ t	■ STon

Factory setting Country-specific:
 ■ kg
 ■ lb

Additional information *Selection*
 For an explanation of the abbreviated units: →  255

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
- 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;liq.)
- lb/bbl (us;beer)
- lb/bbl (us;oil)
- lb/bbl (us;tank)

Imperial units

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

Factory setting

Country-specific:

- kg/l
- lb/ft³

Additional information

Result

The selected unit applies for:

- **External density** parameter (→ 74)
- **Fixed density** parameter (→ 74)

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: → 255

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	<i>SI units</i>	<i>US units</i>	<i>Imperial units</i>
	■ Nl/s ■ Nl/min ■ Nl/h ■ Nl/d ■ Nm^3/s ■ Nm^3/min ■ Nm^3/h ■ Nm^3/d ■ Sm^3/s ■ Sm^3/min ■ Sm^3/h ■ Sm^3/d	■ Sft^3/s ■ Sft^3/min ■ Sft^3/h ■ Sft^3/d ■ Sgal/s (us) ■ Sgal/min (us) ■ Sgal/h (us) ■ Sgal/d (us) ■ Sbbl/s (us;liq.) ■ $\text{Sbbl/min (us;liq.)}$ ■ Sbbl/h (us;liq.) ■ Sbbl/d (us;liq.)	■ Sgal/s (imp) ■ Sgal/min (imp) ■ Sgal/h (imp) ■ Sgal/d (imp)
Factory setting	Country-specific: ■ Nl/h ■ Sft^3/h		
Additional information	<i>Result</i> The selected unit applies for: Correct.vol.flow parameter (→  45) <i>Selection</i>  For an explanation of the abbreviated units: →  255		

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	<i>SI units</i> ■ Nl ■ Nm^3 ■ Sm^3	<i>US units</i> ■ Sft^3 ■ Sgal (us) ■ Sbbl (us;liq.)	<i>Imperial units</i> ■ Sgal (imp)
Factory setting	Country-specific: ■ Nm^3 ■ Sft^3		
Additional information	<i>Selection</i>  For an explanation of the abbreviated units: →  255		

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 *Selection*
 For an explanation of the abbreviated units: →  255

3.2.3 "Process param." submenu

Navigation   Expert → Sensor → Process param.

► Process param.		
Filter options (6710)	→	 60
Flow damping (6661)	→	 62
Flow override (1839)	→	 62
Conduct. measur. (6514)	→	 63
Conduct. damping (1803)	→	 63
Cond. temp.coeff (1891)	→	 64
Temp. damping (1886)	→	 64
Ref.density (1885)	→	 65
► Low flow cut off	→	 65
► Empty pipe det.	→	 68
► ECC	→	 71

Filter options

Navigation   Expert → Sensor → Process param. → Filter options (6710)

Description Use this function to select a filter option.

Selection

- Adaptive
- Adaptive CIP on
- Dynamic
- Dynamic CIP on
- Binomial
- Binomial CIP on

Factory setting

Binomial

Additional information*Description*

The user can choose from a range of filter combinations which can optimize the measurement result depending on the application. Each change in the filter setting affects the output signal of the measuring device. The response time of the output signal increases as the filter depth increases.

Selection

- **Adaptive**
 - Strong flow damping with a short output signal response time.
 - Some time is needed before a stable output signal can be generated.
 - Not suitable for pulsating flow as the average flow can be different here.
- **Dynamic**
 - Average flow damping with a delayed output signal response time.
 - The average flow is displayed correctly over a measuring interval determined over a long period.
- **Binomial**
 - Weak flow damping with a short output signal response time.
 - The average flow is displayed correctly over a measuring interval determined over a long period.
- **CIP**
 - This filter is also available for the **Adaptive** and **Dynamic** filter options.
 - If the CIP filter has detected a change in the medium (abrupt increase in the noise level, e.g. quickly changing medium conductivity values during CIP cleaning), flow damping is greatly increased and the raw value (before flow damping) is limited by the mean value (delimiter). This eliminates extremely high measured errors (up to several 100 m/s).
 - If the CIP filter is enabled, the response time of the entire measuring system increases and the output signal is delayed accordingly.

*Examples**Possible applications for the filters*

Application	Adaptive	Adaptive CIP	Dynamic	Dynamic CIP	Binomial	Binomial CP
Pulsating flow (flow is negative intermittently)	---	---	++	--	++	
Flow changes frequently (flow is dynamic)	-	--	++	-	++	
Clear signal, quick control loop (< 1 s)	--	--	+ ¹⁾		++	
Poor signal, slow control loop (response time of a few seconds)	++	-	--	---	---	
Permanently bad signal	++	--	-	---	-	
Short and severe signal distortion after a while		++		++		
Replacement of a Promag 50/53: system damping Promag 100 = 0.5 * Promag 50/53					+++	

Application	Adaptive	Adaptive CIP	Dynamic	Dynamic CIP	Binomial	Binomial CP
Replacement of a Promag 10: system damping Promag 100 = Promag 10 + 2			+++			
For a stable flow signal (no other requirements)	+++					

1) Flow damping value < 6

Flow damping



Navigation

Expert → Sensor → Process param. → Flow damping (6661)

Description

Use this function to enter flow damping. 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 15

Factory setting

4

Additional information

User entry

- Value = 0: no damping
- Value > 0: damping is increased
- 0 is a weak damping and 15 a strong one.
- A damping of 0 is not recommended, as the measuring signal is then so noisy that it is almost impossible to carry out a measurement.
- The damping depends on the measuring period and the filter type selected.
- An increase or decrease in the damping depends on the application.

Effect

- The damping affects the following variables of the device:
 - Outputs
 - Low flow cut off → 65
 - Totalizers → 199

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

Additional information	<i>Description</i> 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 (→ 92).
-------------------------------	--

Conduct. measur.

Navigation	Expert → Sensor → Process param. → Conduct. measur. (6514)
Prerequisite	The On option is selected in the Conduct. measur. parameter (→ 63) parameter.
Description	Use this function to enable and disable conductivity measurement.
Selection	■ Off ■ On
Factory setting	Off
Additional information	<i>Description</i> For conductivity measurement to work, the medium must have a minimum conductivity of 5 µS/cm.

Conduct. damping

Navigation	Expert → Sensor → Process param. → Conduct. damping (1803)
Prerequisite	In the Conduct. measur. parameter (→ 63), the On option is selected.
Description	Use this function to enter a time constant for conductivity damping (PT1 element).
User entry	0 to 999.9 s
Factory setting	0 s

Additional information *Description*

 The damping is performed by a PT1 element ²⁾.

User entry

- Value = 0: no damping
- Value > 0: damping is increased

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

Cond. temp.coeff**Navigation**

 Expert → Sensor → Process param. → Cond. temp.coeff (1891)

Prerequisite

One of the following conditions is met:

- Order code for "Sensor option", option **CI** "Medium temperature measurement" or
- The temperature is read into the flowmeter from an external device.

Description

Use this function to enter the temperature coefficient for the conductivity.

User entry

Signed floating-point number

Factory setting

2.1 %/K

Temp. damping**Navigation**

 Expert → Sensor → Process param. → Temp. damping (1886)

Prerequisite

One of the following conditions is met:

- Order code for "Sensor option", option **CI** "Medium temperature measurement" or
- The temperature is read into the flowmeter from an external device.

Description

Use this function to enter the time constant for temperature damping.

User entry

0 to 999.9 s

Factory setting

0 s

2) Proportional behavior with first-order lag

Ref.density		
Navigation	Expert → Sensor → Process param. → Ref.density (1885)	
Description	Use this function to enter a fixed value for the reference density.	
User entry	Positive floating-point number	
Factory setting	Country-specific: ■ 1 kg/l ■ 1 lb/ft³	
Additional information	<i>Dependency</i> The unit is taken from the Density unit parameter (→ 58)	

"Low flow cut off" submenu

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

▶ Low flow cut off		
Assign variable (1837)	→	65
On value (1805)	→	66
Off value (1804)	→	66
Pres. shock sup. (1806)	→	67

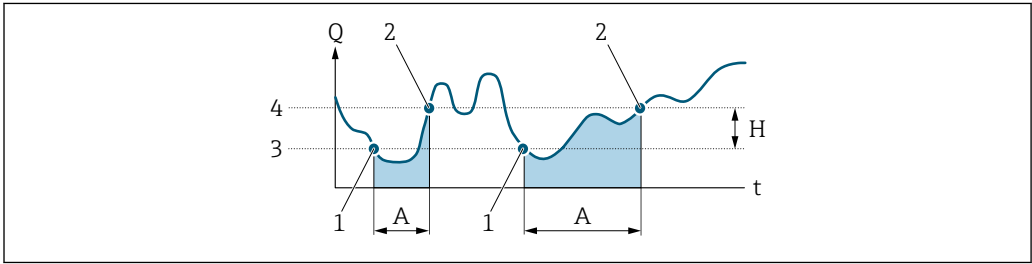
Assign variable		
Navigation	Expert → Sensor → Process param. → Low flow cut off → Assign variable (1837)	
Description	Use this function to select the process variable for low flow cutoff detection.	
Selection	■ Off ■ Volume flow ■ Mass flow ■ Correct.vol.flow	
Factory setting	Volume flow	

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 (→ 65).
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 → 66.
User entry	Positive floating-point number
Factory setting	Depends on country and nominal diameter→ 251
Additional information	<i>Dependency</i> The unit depends on the process variable selected in the Assign variable parameter (→ 65).

Off value

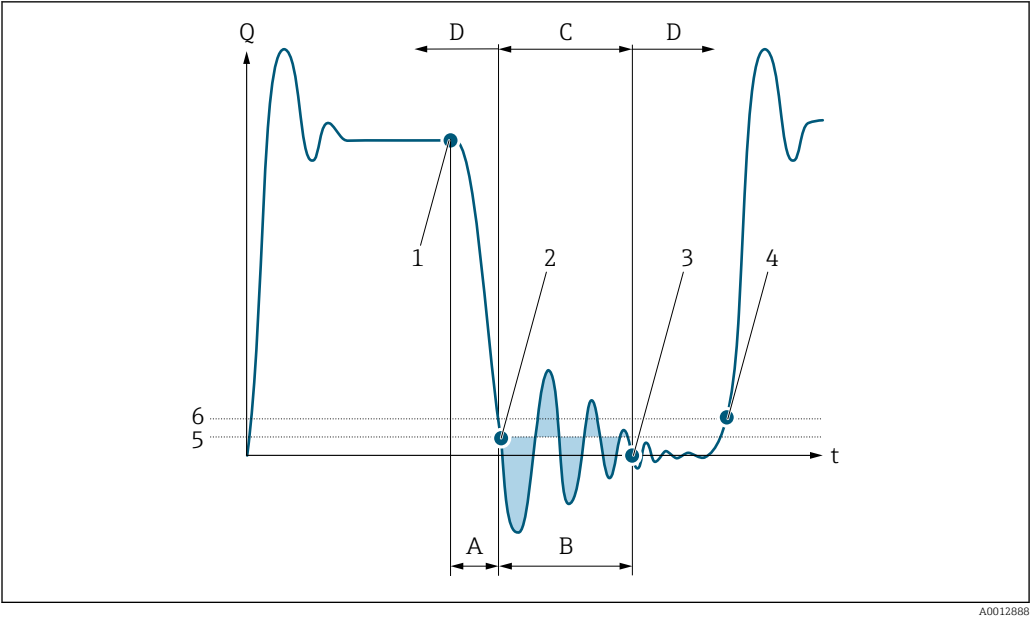
Navigation	Expert → Sensor → Process param. → Low flow cut off → Off value (1804)
Prerequisite	A process variable is selected in the Assign variable parameter (→ 65).
Description	Use this function to enter a switch-off value for low flow cut off. The off value is entered as a positive hysteresis from the on value→ 66.
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 (→ 65).
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	<i>Description</i> Pressure shock suppression is enabled ■ Prerequisite: Flow rate < on-value of low flow cut off ■ 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. <i>Example</i> 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.



- 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

"Empty pipe det." submenu

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

► Empty pipe det.

Empty pipe det. (1860)

→ 69

Switch point EPD (6562)

→ 69

Response time (1859)

→ 69

New adjustment (6560)

→ 70

Progress (6571)

→ 70

Empty pipe value (6527)

→ 70

Full pipe value (6548)	→ 70
Meas. value EPD (6559)	→ 71

Empty pipe det.



Navigation	Expert → Sensor → Process param. → Empty pipe det. → Empty pipe det. (1860)
Description	Use this function to switch empty pipe detection on and off.
Selection	■ Off ■ On
Factory setting	Off

Switch point EPD



Navigation	Expert → Sensor → Process param. → Empty pipe det. → Switch point EPD (6562)
Prerequisite	The On option is selected in the Empty pipe det. parameter (→ 69).
Description	Use this function to enter the percentage threshold value of the resistance in relation to the adjustment values.
User entry	0 to 100 %
Factory setting	10 %

Response time



Navigation	Expert → Sensor → Process param. → Empty pipe det. → Response time (1859)
Prerequisite	A process variable is selected in the Assign variable parameter (→ 69).
Description	Use this function to enter the minimum length of time (debouncing time) the signal must be present for the diagnostic message △S862 Pipe empty to be triggered if the measuring pipe is empty or partially full.
User entry	0 to 100 s
Factory setting	1 s

New adjustment 	
Navigation	  Expert → Sensor → Process param. → Empty pipe det. → New adjustment (6560)
Prerequisite	The On option is selected in the Empty pipe det. parameter (→  69).
Description	For selecting whether to perform an empty pipe or full pipe adjustment.
Selection	■ Cancel ■ Empty pipe adj. ■ Full pipe adjust
Factory setting	Cancel
Progress	
Navigation	  Expert → Sensor → Process param. → Empty pipe det. → Progress (6571)
Prerequisite	The On option is selected in the Empty pipe det. parameter (→  69).
Description	Use this function to view the progress.
User interface	■ Ok ■ Busy ■ Not ok
Empty pipe value 	
Navigation	  Expert → Sensor → Process param. → Empty pipe det. → Empty pipe value (6527)
Prerequisite	■ In the Empty pipe det. parameter (→  69), the On option is selected. ■ Adjustment value > full pipe value.
Description	Displays the adjustment value when the measuring pipe is empty.
User interface	Positive floating-point number
Full pipe value 	
Navigation	  Expert → Sensor → Process param. → Empty pipe det. → Full pipe value (6548)
Prerequisite	■ In the Empty pipe det. parameter (→  69), the On option is selected. ■ Adjustment value < empty pipe value.
Description	Displays the adjustment value when the measuring pipe is full.

User interface Positive floating-point number

Meas. value EPD

Navigation  Expert → Sensor → Process param. → Empty pipe det. → Meas. value EPD (6559)

Prerequisite In the **Empty pipe det.** parameter (→  69), the **On** option is selected.

Description Displays the current measured value.

User interface Positive floating-point number

"ECC" submenu

Navigation  Expert → Sensor → Process param. → ECC

► ECC

ECC (6528)

ECC duration (6555)

ECC recov. time (6556)

ECC clean. cycle (6557)

ECC Polarity (6631)

→  71

→  72

→  72

→  72

→  73

ECC

Navigation  Expert → Sensor → Process param. → ECC → ECC (6528)

Prerequisite For the following order code:
"Application package", option **EC** "ECC electrode cleaning"

Description Use this function to enable and disable cyclic electrode cleaning.

Selection
■ Off
■ On

Factory setting Off

ECC duration

Navigation  Expert → Sensor → Process param. → ECC → ECC duration (6555)

Prerequisite For the following order code:
"Application package", option **EC** "ECC electrode cleaning"

Description Use this function to enter the duration of electrode cleaning in seconds.

User entry 0.01 to 30 s

Factory setting 2 s

ECC recov. time

Navigation  Expert → Sensor → Process param. → ECC → ECC recov. time (6556)

Prerequisite For the following order code:
"Application package", option **EC** "ECC electrode cleaning"

Description Use this function to enter the recovery time after electrode cleaning to prevent signal output interference. The current output values are frozen in the meanwhile.

User entry 1 to 600 s

Factory setting 60 s

ECC clean. cycle

Navigation  Expert → Sensor → Process param. → ECC → ECC clean. cycle (6557)

Prerequisite For the following order code:
"Application package", option **EC** "ECC electrode cleaning"

Description Use this function to enter the pause duration until the next electrode cleaning.

User entry 0.5 to 168 h

Factory setting 0.5 h

ECC Polarity	
Navigation	 Expert → Sensor → Process param. → ECC → ECC Polarity (6631)
Prerequisite	For the following order code: "Application package", option EC "ECC electrode cleaning"
Description	Displays the polarity of the electrode cleaning circuit.
User interface	■ Positive ■ Negative
Factory setting	Depends on the electrode material: ■ Platinum: Negative option ■ Tantalum, Alloy C22, stainless steel: Positive option

3.2.4 "External comp." submenu

Navigation  Expert → Sensor → External comp.

► External comp.	
Density source (6615)	→  73
Fixed density (6623)	→  74
External density (6630)	→  74
Linear exp coeff (1817)	→  75
Square exp coeff (1818)	→  75
Ref. density (1892)	→  75
Temp. source (6712)	→  76
External temp. (6673)	→  77
Ref. temperature (1816)	→  77

Density source 	
Navigation	 Expert → Sensor → External comp. → Density source (6615)
Description	Use this function to select the density source.

- Selection**
- Fixed density
 - External density
 - Current input 1 *
 - Current input 2 *
 - Current input 3 *
 - Calculated value

Factory setting Fixed density

Fixed density

Navigation   Expert → Sensor → External comp. → Fixed density (6623)

Prerequisite The **Fixed density** option is selected in the **Density source** parameter (→  73).

Description Use this function to enter a fixed value for the density.

User entry Positive floating-point number

Factory setting Country-specific:
 ■ 1 000 kg/l
 ■ 1 000 lb/ft³

Additional information *Dependency*
 The unit is taken from the **Density unit** parameter (→  58)

External density

Navigation   Expert → Sensor → External comp. → External density (6630)

Prerequisite The **External density** option is selected in the **Density source** parameter (→  73).

User entry Positive floating-point number

Factory setting 0 kg/l

Additional information *Dependency*
 The unit is taken from the **Density unit** parameter (→  58)

* Visibility depends on order options or device settings

Linear exp coeff



Navigation	 Expert → Sensor → External comp. → Linear exp coeff (1817)
Prerequisite	The Calculated value option is selected in the Density source parameter (→  73) parameter.
Description	Use this function to enter a linear, fluid-specific expansion coefficient for calculating the reference density.
User interface	Signed floating-point number
Factory setting	$-2.0295 \cdot 10^{-04} \text{ 1/K}$

Square exp coeff



Navigation	 Expert → Sensor → External comp. → Square exp coeff (1818)
Prerequisite	The Calculated value option is selected in the Density source parameter (→  73) parameter.
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 interface	Signed floating-point number
Factory setting	$-3.8436 \cdot 10^{-06} \text{ 1/K}^2$

Ref. density



Navigation	 Expert → Sensor → External comp. → Ref. density (1892)
Prerequisite	The Calculated value option is selected in the Density source parameter (→  73) parameter.
Description	Displays the reference density.
User interface	Positive floating-point number
Additional information	<i>Description</i> The reference density is required for density calculation. <i>Deviation of the process temperature from the reference temperature:</i> $\Delta T = T - T_{\text{ref}}$ ΔT: Deviation T: Process temperature T_{ref}: Ref. temperature (→  77)

Temperature-compensated density:

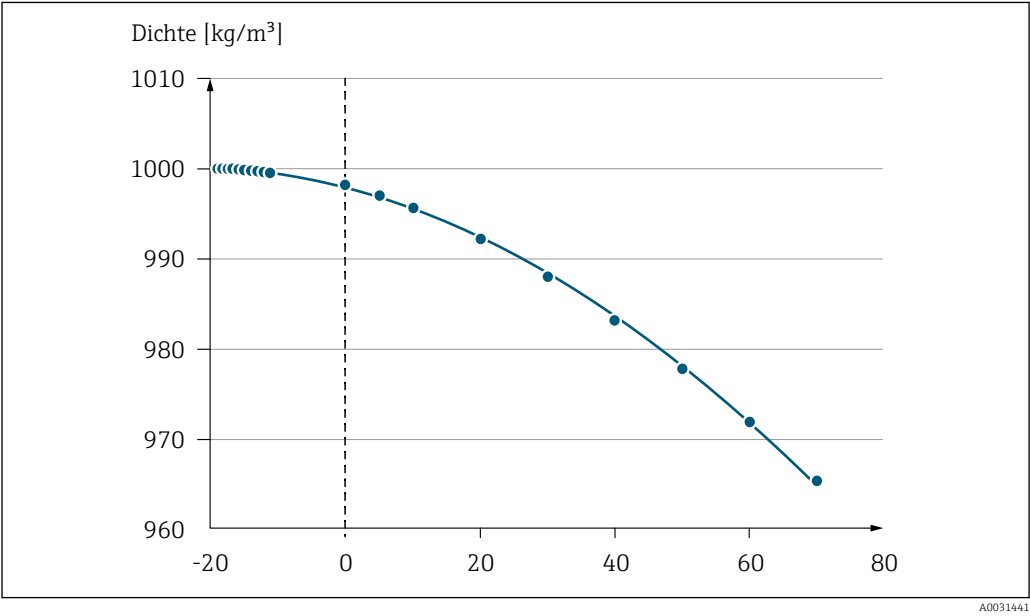
- $\rho_{comp} = \rho_{ref}(1 + \alpha \Delta T + \beta \Delta T^2)$
- ρ_{comp} : Calculated density
- ρ_{ref} : Reference density
- ΔT : Deviation of the process temperature from the reference temperature
- α : Linear exp coeff (→ ⓘ 75)
- β : Square exp coeff (→ ⓘ 75)

Example for water (factory setting)

For a reference temperature of $T_{ref} = 20\text{ °C}$

A quadratic fit of a number of density values results in the following coefficients:

- $\alpha = -2.0295 \cdot 10^{-4}\text{ 1/K}$
- $\beta = -3.8436 \cdot 10^{-6}\text{ 1/K}^2$
- $\rho_{ref} = 997.82\text{ kg/m}^3$



2 Quadratic fit

Dependency

ⓘ The unit is taken from the **Density unit** parameter (→ ⓘ 58)

Temp. source



Navigation

ⓘ ⓘ Expert → Sensor → External comp. → Temp. source (6712)

Description

Use this function to select the temperature source.

- Selection**
- Int.temp. sensor *
 - Off
 - External value
 - Current input 1 *
 - Current input 2 *
 - Current input 3 *

Factory setting Off

External temp.

- Navigation**  Expert → Sensor → External comp. → External temp. (6673)
- Prerequisite** The **External value** option is selected in the **Temp. source** parameter (→  76).
- User entry** Floating point number with sign
- Factory setting** -273.15 °C
- Additional information** *Dependency*
 The unit is taken from the **Temperature unit** parameter (→  56)

Ref. temperature

- Navigation**  Expert → Sensor → External comp. → Ref. temperature (1816)
- Prerequisite** The **Fixed density** option or **External density** option are selected in the **Density source** parameter (→  73).
- Description** Use this function to enter a reference temperature for calculating the reference density.
- User interface** -273.15 to 99 999 °C
- Factory setting** Country-specific:
 ■ +20 °C
 ■ +68 °F
- Additional information** *Dependency*
 The unit is taken from the **Temperature unit** parameter (→  56)

Reference density calculation

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

A0023403

* Visibility depends on order options or device settings

- 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]

3.2.5 "Sensor adjustment" submenu

Navigation   Expert → Sensor → Sensor adjustm.

► Sensor adjustm.

Install. direct. (1809)

→  78

Integration time (6533)

→  78

Measuring period (6536)

→  79

► Variable adjust

→  79

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.

Integration time

Navigation	  Expert → Sensor → Sensor adjustm. → Integration time (6533)
Description	Display the duration of an integration cycle.
User interface	1 to 65 ms

Measuring period	
Navigation	 Expert → Sensor → Sensor adjustm. → Measuring period (6536)
Description	Display the time of a full measuring period.
User interface	0 to 1 000 ms

"Variable adjust" submenu

Navigation  Expert → Sensor → Sensor adjustm. → Variable adjust

► Variable adjust		
Vol. flow offset (1831)	→	 80
Vol. flow factor (1832)	→	 80
Mass flow offset (1841)	→	 80
Mass flow factor (1846)	→	 81
Conduct. offset (1848)	→	 81
Conduct. factor (1849)	→	 81
Corr. vol offset (1866)	→	 82
Corr. vol factor (1867)	→	 82
Temp. offset (1868)	→	 82
Temp. factor (1869)	→	 83
Corr.cond.offset (1870)	→	 83
Corr.cond.factor (1871)	→	 83
Flow vel. offset (1879)	→	 84
Flow vel. factor (1880)	→	 84

Vol. flow offset

Navigation	 Expert → Sensor → Sensor adjustm. → Variable adjust → Vol. flow offset (1831)
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 m ³ /s.
User entry	Signed floating-point number
Factory setting	0 m ³ /s
Additional information	<i>Description</i>  Corrected value = (factor × value) + offset

Vol. flow factor

Navigation	 Expert → Sensor → Sensor adjustm. → Variable adjust → Vol. flow factor (1832)
User entry	Positive floating-point number
Factory setting	1
Additional information	<i>Description</i>  Corrected value = (factor × value) + offset

Mass flow offset

Navigation	 Expert → Sensor → Sensor adjustm. → Variable adjust → Mass flow offset (1841)
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	<i>Description</i>  Corrected value = (factor × value) + offset

Mass flow factor



Navigation	  Expert → Sensor → Sensor adjustm. → Variable adjust → Mass flow factor (1846)
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	<i>Description</i>  Corrected value = (factor × value) + offset

Conduct. offset



Navigation	  Expert → Sensor → Sensor adjustm. → Variable adjust → Conduct. offset (1848)
Prerequisite	The On option is selected in the Conduct. measur. parameter (→  63) parameter.
Description	Use this function to enter the zero point shift for the conductivity trim. The conductivity unit on which the shift is based is S/m.
User entry	Signed floating-point number
Factory setting	0 S/m
Additional information	<i>Description</i>  Corrected value = (factor × value) + offset

Conduct. factor



Navigation	  Expert → Sensor → Sensor adjustm. → Variable adjust → Conduct. factor (1849)
Prerequisite	The On option is selected in the Conduct. measur. parameter (→  63) parameter.
Description	Use this function to enter a quantity factor for the conductivity. This multiplication factor is applied over the conductivity range.
User entry	Positive floating-point number
Factory setting	1
Additional information	<i>Description</i>  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

Temp. offset

Navigation   Expert → Sensor → Sensor adjustm. → Variable adjust → Temp. offset (1868)

Prerequisite One of the following conditions is met:

- Order code for "Sensor option", option **CI** "Medium temperature measurement"
- or
- The temperature is read into the flowmeter from an external device.

Description Use this function to enter the zero point shift for the temperature trim. The temperature unit on which the shift is based is 1 K.

User entry Signed floating-point number

Factory setting 0 K

Additional information*Description*

Corrected value = (factor × value) + offset

Temp. factor**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Temp. factor (1869)

Prerequisite

One of the following conditions is met:

- Order code for "Sensor option", option **CI** "Medium temperature measurement" or
- The temperature is read into the flowmeter from an external device.

Description

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

User entry

Positive floating-point number

Factory setting

1

Additional information*Description*

Corrected value = (factor × value) + offset

Corr.cond.offset**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Corr.cond.offset (1870)

PrerequisiteThe **On** option is selected in the **Conduct. measur.** parameter (→ 63) parameter.**Description**

Use this function to enter the zero point shift to trim the corrected conductivity. The conductivity unit on which the shift is based is µS/cm.

User entry

Signed floating-point number

Factory setting

0 S/m

Additional information*Description*

Corrected value = (factor × value) + offset

Corr.cond.factor**Navigation**

Expert → Sensor → Sensor adjustm. → Variable adjust → Corr.cond.factor (1871)

PrerequisiteThe **On** option is selected in the **Conduct. measur.** parameter (→ 63) parameter.

Description	Use this function to enter a quantity factor for the corrected conductivity. In each case, this factor refers to the conductivity in $\mu\text{S}/\text{cm}$.
User entry	Positive floating-point number
Factory setting	1
Additional information	<i>Description</i>  Corrected value = (factor $\times$ value) + offset

Flow vel. offset



Navigation	 Expert $\rightarrow$ Sensor $\rightarrow$ Sensor adjustm. $\rightarrow$ Variable adjust $\rightarrow$ Flow vel. offset (1879)
Description	Use this function to enter the zero point shift for the flow velocity trim. The flow velocity unit on which the shift is based is m/s.
User entry	Signed floating-point number
Factory setting	0 m/s
Additional information	<i>Description</i>  Corrected value = (factor $\times$ value) + offset

Flow vel. factor



Navigation	 Expert $\rightarrow$ Sensor $\rightarrow$ Sensor adjustm. $\rightarrow$ Variable adjust $\rightarrow$ Flow vel. factor (1880)
Description	Use this function to enter a quantity factor (without time) for the flow velocity. This multiplication factor is applied over the flow velocity range.
User entry	Positive floating-point number
Factory setting	1
Additional information	<i>Description</i>  Corrected value = (factor $\times$ value) + offset

3.2.6 "Calibration" submenu

Navigation  Expert → Sensor → Calibration

► Calibration		
Nominal diameter (2807)	→ 	85
Cal. factor (6522)	→ 	85
Zero point (6546)	→ 	85
Cond. cal. fact. (6718)	→ 	86

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.

Cal. factor

Navigation	 Expert → Sensor → Calibration → Cal. factor (6522)
Description	Displays the current calibration factor for the sensor.
User interface	Positive floating-point number
Factory setting	Depends on nominal diameter and calibration.

Zero point



Navigation	 Expert → Sensor → Calibration → Zero point (6546)
Description	This function shows the zero point correction value for the sensor.

User interface	Signed floating-point number
Factory setting	Depends on nominal diameter and calibration

Cond. cal. fact.	
------------------	--

Navigation	Expert → Sensor → Calibration → Cond. cal. fact. (6718)
Prerequisite	The On option is selected in the Conduct. measur. parameter (→ 63) parameter.
Description	Displays the calibration factor for the conductivity measurement.
User interface	0.01 to 10 000

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)

→ 86

→ 87

→ 87

→ 88

→ 88

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

* Visibility depends on order options or device settings

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
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	Description The I/O configuration is changed in the I/O type parameter (→  87).

3.4 "Input" submenu

Navigation   Expert → Input

▶ Input

▶ Current input 1 to n

→  88

▶ Status input 1 to n

→  92

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)

→  89

Signal mode (1610-1 to n)	→ 89
Current span (1605-1 to n)	→ 90
0/4 mA value (1606-1 to n)	→ 90
20 mA value (1607-1 to n)	→ 90
Failure mode (1601-1 to n)	→ 91
Failure value (1602-1 to n)	→ 91

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

* Visibility depends on order options or device settings

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
Factory setting	Country-specific: ■ 4...20 mA NAMUR ■ 4...20 mA US
Additional information	<i>Examples</i>  Sample values for the current range: Current span parameter (→  96)

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	<i>Current input behavior</i> The current input behaves differently depending on the settings configured in the following parameters: ■ Current span (→  90) ■ Failure mode (→  91) <i>Configuration examples</i>  Pay attention to the configuration examples for 4 mA value parameter (→  97).

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 (→ 97).

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 (→ 90).

Selection

- Alarm
- Last valid value
- Defined value

Factory setting Alarm

Additional information *Options*

- 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 (→ 91)).

Failure value



Navigation Expert → Input → Current input 1 to n → Failure value (1602–1 to n)

Prerequisite In the **Failure mode** parameter (→ 91), 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)

→  92

Assign stat.inp. (1352-1 to n)

→  92

Val.stat.inp. (1353-1 to n)

→  93

Active level (1351-1 to n)

→  93

Response time (1354-1 to n)

→  93

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 (→  62) is activated.  Note on the Flow override (→  62): ■ The Flow override (→  62) 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

→  94

► PFS output 1 to n

→  107

► Relay output 1 to n

→  126

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)

→  95

Signal mode (0377-1 to n)

→  95

Assign curr. 1 to n (0359-1 to n)

→  95

Current span (0353-1 to n)

→  96

Fixed current (0365-1 to n)

→  97

0/4 mA value (0367-1 to n)

→  97

20 mA value (0372-1 to n)

→  99

Measuring mode (0351-1 to n)

→  99

Damping out. 1 to n (0363-1 to n)

→  104

Response time (0378-1 to n)

→  104

Failure mode (0364-1 to n)

→  105

Failure current (0352-1 to n)

→  106

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

→  106

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

→  107

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	<i>"Not used" option</i> 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.
Selection	■ Off * ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Flow velocity ■ Conductivity * ■ CorrConductivity * ■ Temperature * ■ Electronic temp.
Factory setting	Volume flow

* Visibility depends on order options or device settings

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

Additional information

Description

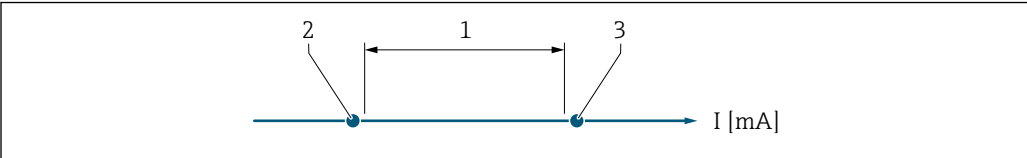
-  In the event of a device alarm, the current output adopts the value specified in the **Failure mode** parameter (→ 105).
 - If the measured value is outside the measuring range, the diagnostic message **△S441 Curr.output 1 to n** is displayed.
 - The measuring range is specified via the **0/4 mA value** parameter (→ 97) and **20 mA value** parameter (→ 99).

"Fixed current" option

The current value is set via the **Fixed current** parameter (→ 97).

Example

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



A0034351

- 1 Current span for process value
- 2 Lower level for signal on alarm
- 3 Upper level for signal on alarm

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 (→  96).
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

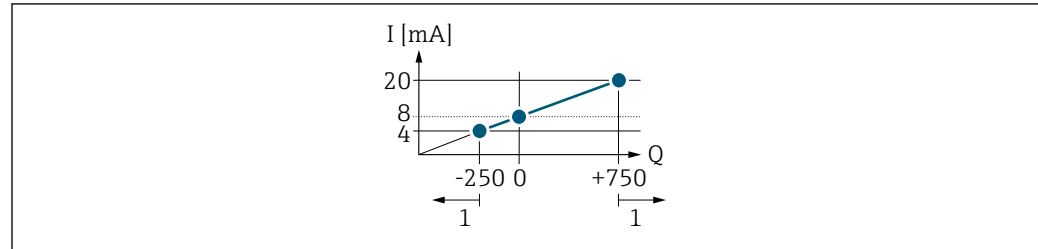


Navigation	 Expert → Output → Curr.output 1 to n → 0/4 mA value (0367–1 to n)
Prerequisite	One of the following options is selected in the Current span parameter (→  96): ■ 4...20 mA NAMUR ■ 4...20 mA US ■ 4...20 mA ■ 0...20 mA
Description	Use this function to enter a value for the 0/4 mA current.
User entry	Signed floating-point number
Factory setting	Country-specific: ■ 0 l/h ■ 0 gal/min (us)
Additional information	<i>Description</i> Positive and negative values are permitted depending on the process variable assigned in the Assign curr. parameter (→  95). 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 (→  99). <i>Dependency</i>  The unit depends on the process variable selected in the Assign curr. parameter (→  95). <i>Current output behavior</i> The current output behaves differently depending on the settings configured in the following parameters: ■ Current span (→  96) ■ Failure mode (→  105) <i>Configuration examples</i> 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 (→  97) = not equal to zero flow (e.g. -250 m³/h)
- **20 mA value** parameter (→  99) = not equal to zero flow (e.g. +750 m³/h)
- Calculated current value = 8 mA at zero flow



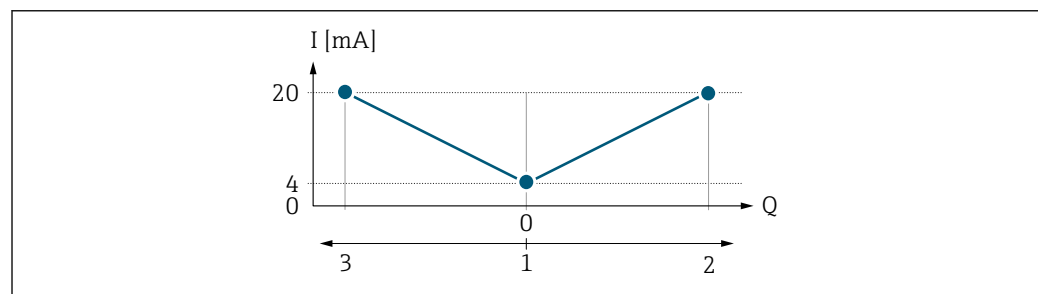
A0013757

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 (→  97) and **20 mA value** parameter (→  99). 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



A0013758

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 (→  97) and **20 mA value** parameter (→  99) must have the same sign. The value for the **20 mA value** parameter (→  99) (e.g. reverse flow) corresponds to the mirrored value for the **20 mA value** parameter (→  99) (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 →  99.

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 (→ 96): ■ 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 → 250
Additional information	<i>Description</i> Positive and negative values are permitted depending on the process variable assigned in the Assign curr. parameter (→ 95). 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 (→ 97). <i>Dependency</i> The unit depends on the process variable selected in the Assign curr. parameter (→ 95). <i>Example</i> ■ 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 (→ 99), different signs cannot be entered for the values of the 0/4 mA value parameter (→ 97) and 20 mA value parameter (→ 99). The diagnostic message △S441 Curr.output 1 to n is displayed. <i>Configuration examples</i> Observe the configuration examples for the 0/4 mA value parameter (→ 97).

Measuring mode	
Navigation	Expert → Output → Curr.output 1 to n → Measuring mode (0351-1 to n)
Prerequisite	In the Assign curr. parameter (→ 95), one of the following options is selected: ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Flow velocity ■ Conductivity*

* Visibility depends on order options or device settings

- CorrConductivity *
- Temperature *
- Electronic temp.

In the **Current span** parameter (→ ⓘ 96), 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



The process variable that is assigned to the current output via the **Assign curr.** parameter (→ ⓘ 95) is displayed below the parameter.

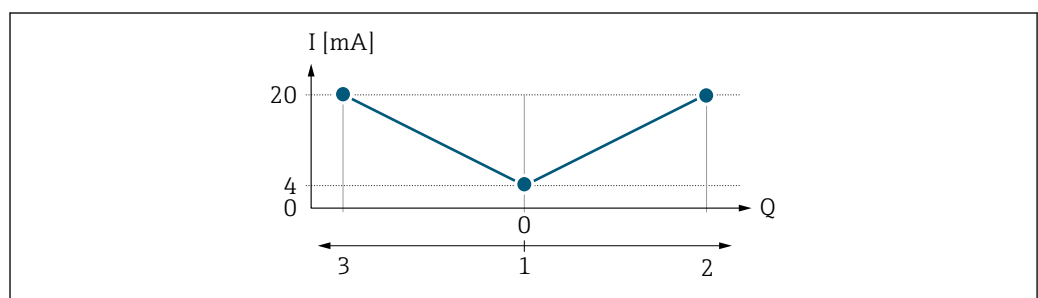
"Forward flow" option

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 (→  97) and **20 mA value** parameter (→ ) must have the same sign.
- The value for the **20 mA value** parameter (→ ) (e.g. reverse flow) corresponds to the mirrored value for the **20 mA value** parameter (→ ) (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.

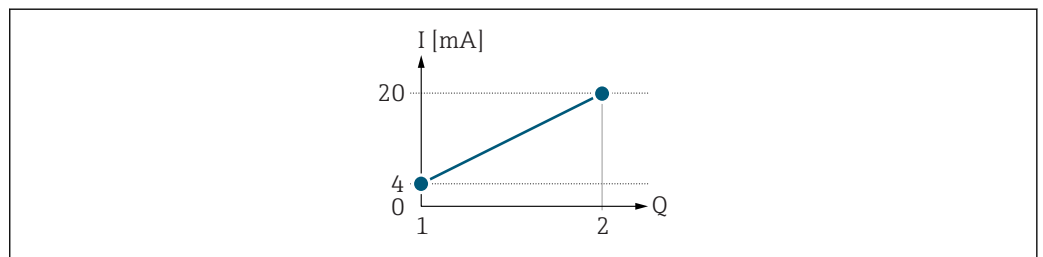
Flow values can aggregate in the buffer in the event of prolonged and unwanted fluid reverse flow. However, these flows are not taken into consideration by the current output configuration, i.e. the reverse flow is not compensated.

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

 3 Measuring range

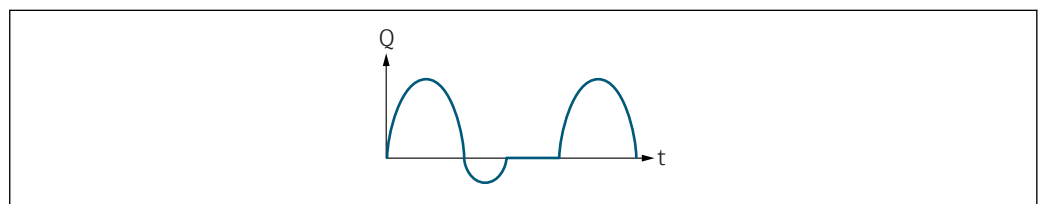
I Current

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

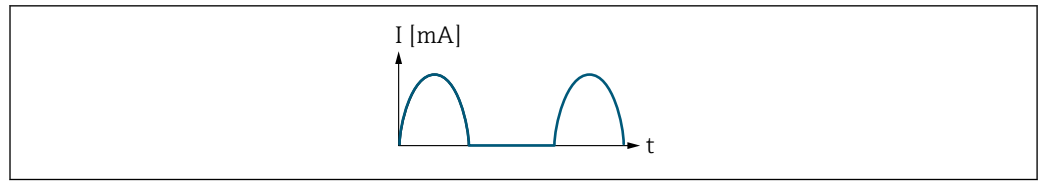
 4 Flow response

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:.

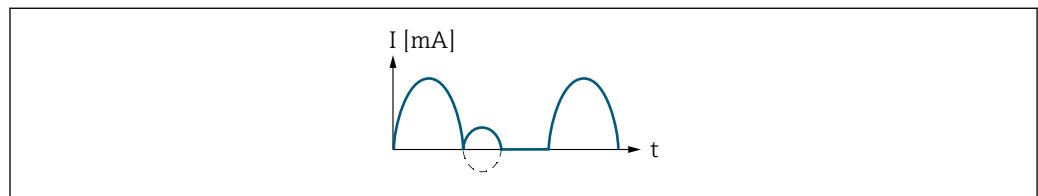


A0028092

I Current
 t Time

With **Forward/Reverse** option

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

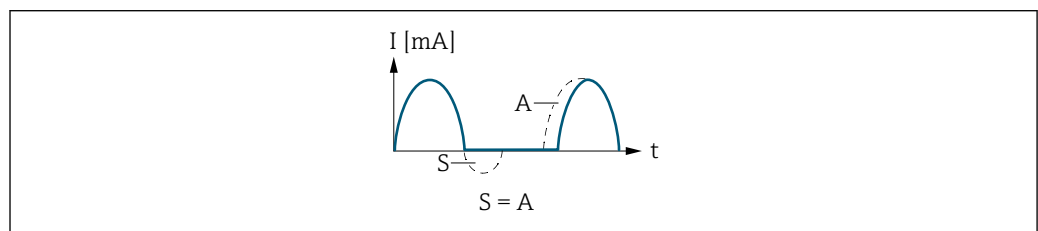


A0028093

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.

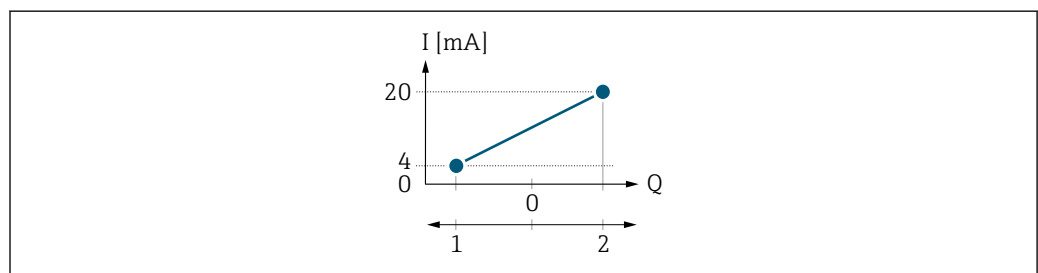


A0028094

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

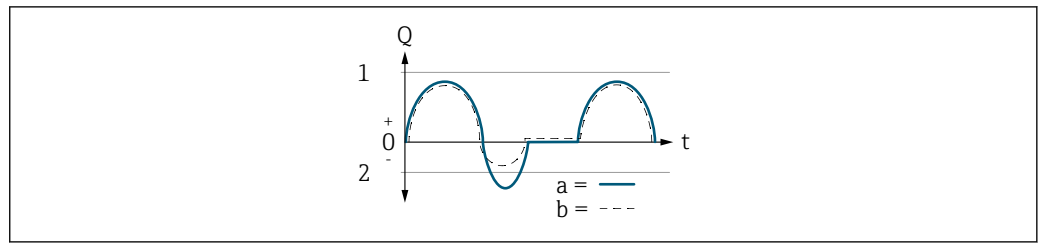


A0028095

5 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

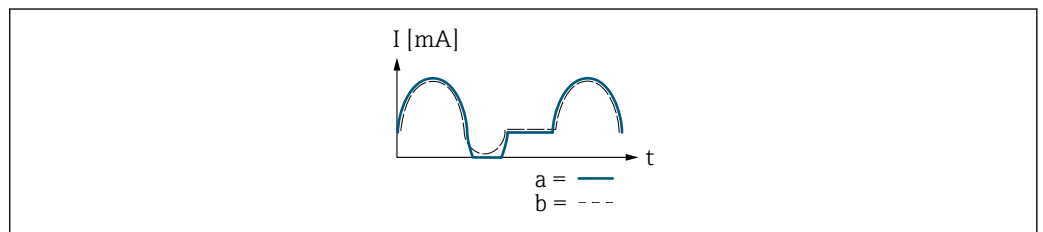


A0028098

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

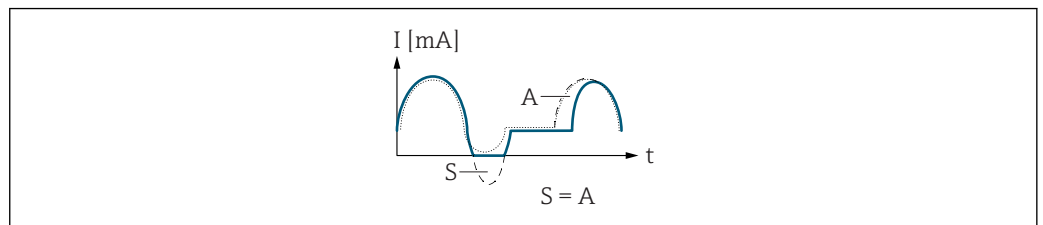
I Current
t Time

With **Forward/Reverse** option

This option is not possible in this case as the values for the **0/4 mA value** parameter ($\rightarrow$ 97) and **20 mA value** parameter ($\rightarrow$ 99) 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 (→  95) and one of the following options is selected in the Current span parameter (→  96): ■ 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 element³⁾) 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 (→  95): ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Flow velocity ■ Conductivity[*] ■ CorrConductivity[*] ■ Temperature[*] ■ Electronic temp. One of the following options is selected in the Current span parameter (→  96): ■ 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.

³⁾ proportional transmission behavior with first order delay
^{*} Visibility depends on order options or device settings

User interface Positive floating-point number

Additional information *Description*



The response time is made up of the time specified for the following dampings:

- Current output damping →  104
and
- Depending on the measured variable assigned to the output.
Flow 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 (→  95) and one of the following options is selected in the **Current span** parameter (→  96):

- 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.

Selection

- Min.
- Max.
- Last valid value
- Actual value
- Defined value

Factory setting Max.

Additional information*Description*

 This setting does not affect the failsafe mode of other outputs and totalizers. This is specified in separate parameters.

"Min." option

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 (→  96).

"Max." option

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 (→  96).

"Last valid value" option

The current output adopts the last measured value that was valid before the device alarm occurred.

"Actual value" option

The current output adopts the measured value on the basis of the current flow measurement; the device alarm is ignored.

"Defined value" option

The current output adopts a defined measured value.

 The measured value is defined via the **Failure current** parameter (→  106).

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 (→  105).

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)	→ 	108
Signal mode (0490-1 to n)	→ 	109
Operating mode (0469-1 to n)	→ 	109
Assign pulse 1 to n (0460-1 to n)	→ 	111
Value per pulse (0455-1 to n)	→ 	111
Pulse width (0452-1 to n)	→ 	112
Measuring mode (0457-1 to n)	→ 	112
Failure mode (0480-1 to n)	→ 	113
Pulse output 1 to n (0456-1 to n)	→ 	114
Assign freq. (0478-1 to n)	→ 	114
Min. freq. value (0453-1 to n)	→ 	115
Max. freq. value (0454-1 to n)	→ 	115
Val. at min.freq (0476-1 to n)	→ 	115
Val. at max.freq (0475-1 to n)	→ 	116
Measuring mode (0479-1 to n)	→ 	116
Damping out. 1 to n (0477-1 to n)	→ 	117

Response time (0491-1 to n)	→  118
Failure mode (0451-1 to n)	→  118
Failure freq. (0474-1 to n)	→  119
Output freq. 1 to n (0471-1 to n)	→  119
Switch out funct (0481-1 to n)	→  119
Assign diag. beh (0482-1 to n)	→  120
Assign limit (0483-1 to n)	→  121
Switch-on value (0466-1 to n)	→  123
Switch-off value (0464-1 to n)	→  123
Assign dir.check (0484-1 to n)	→  124
Assign status (0485-1 to n)	→  124
Switch-on delay (0467-1 to n)	→  124
Switch-off delay (0465-1 to n)	→  125
Failure mode (0486-1 to n)	→  125
Switch status 1 to n (0461-1 to n)	→  125
Invert outp.sig. (0470-1 to n)	→  126

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

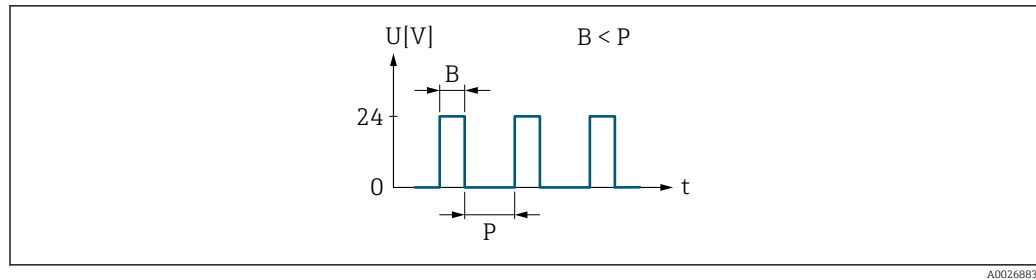


Navigation	Expert → Output → PFS output 1 to n → Signal mode (0490–1 to n)
Description	Use this function to select the signal mode for the pulse/frequency/switch output.
Selection	■ Passive ■ Active
Factory setting	Passive

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	<i>"Pulse" option</i> Quantity-dependent pulse with configurable pulse width ■ Whenever a specific mass, volume or corrected volume 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 1 000 Impuls/s



A0026883

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

B Pulse width entered

P Pauses between the individual pulses

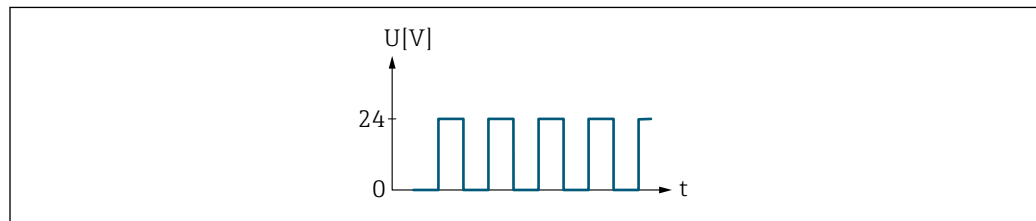
"Frequency" option

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 volume flow, mass flow, corrected volume flow, flow velocity, conductivity, corrected conductivity, temperature or electronic temperature.

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

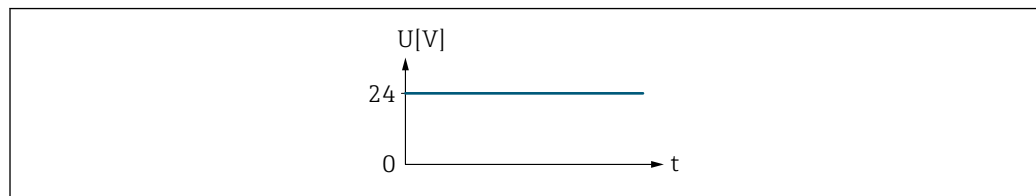
7 Flow-proportional frequency output

"Switch" option

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

Example

Alarm response without alarm

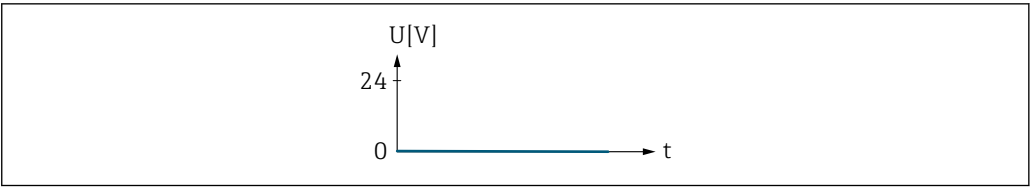


A0026884

8 No alarm, high level

Example

Alarm response in case of alarm



A0026885

9 Alarm, low level

Assign pulse 1 to n

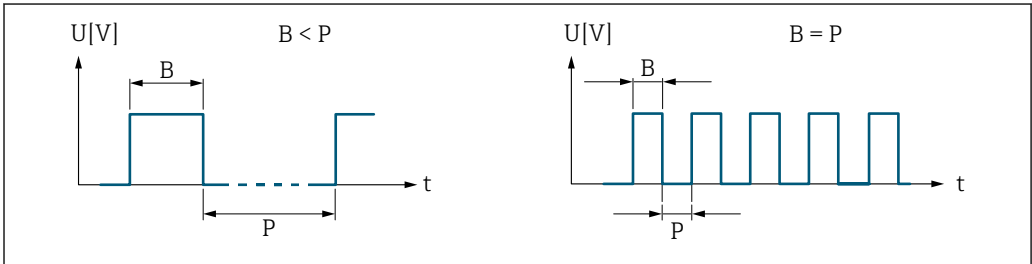
Navigation	 Expert → Output → PFS output 1 to n → Assign pulse 1 to n (0460–1 to n)
Prerequisite	The Pulse option is selected in the Operating mode parameter (→  109) parameter.
Description	Use this function to select the process variable for the pulse output.
Selection	■ Off ■ Volume flow ■ Mass flow ■ Correct.vol.flow
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 (→  109) and a process variable is selected in the Assign pulse parameter (→  111).
Description	Use this function to enter the value for the measured value that a pulse is equivalent to.
User entry	Signed floating-point number
Factory setting	Depends on country and nominal diameter→  251
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 (→ 109) and a process variable is selected in the Assign pulse parameter (→ 111).
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 (→ 109), the Pulse option is selected, and one of the following options is selected in the Assign pulse parameter (→ 111): ■ Mass flow ■ Volume flow ■ Correct.vol.flow
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 (→  99) <i>Examples</i>  For a detailed description of the configuration examples, see the Measuring mode parameter (→  99)

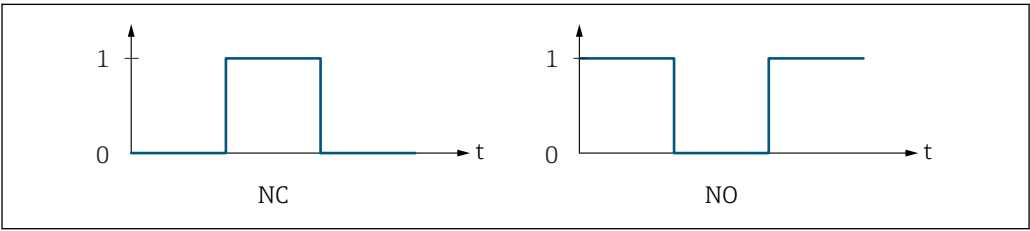
Failure mode

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 (→  109) and a process variable is selected in the Assign pulse parameter (→  111).
Description	Use this function to select the failure mode of the pulse output in the event of a device alarm.
Selection	■ Actual value ■ No pulses
Factory setting	No pulses
Additional information	<i>Description</i> The dictates of safety render it advisable to ensure that the pulse output shows a predefined behavior in the event of a device alarm. <i>Selection</i> ■ 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 (→ 109) parameter.
Description	Displays the pulse frequency currently output.
User interface	Positive floating-point number
Additional information	<i>Description</i> ■ 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.



AA0028726

- 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 (→ 126) 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 (→ 113)) 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 (→ 109) parameter.
Description	Use this function to select the process variable for the frequency output.
Selection	■ Off ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Flow velocity

- Conductivity *
- CorrConductivity *
- Temperature *
- Electronic temp.

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 (→  109) and a process variable is selected in the **Assign freq.** parameter (→  114).

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 (→  109) and a process variable is selected in the **Assign freq.** parameter (→  114).

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 (→  109) and a process variable is selected in the **Assign freq.** parameter (→  114).

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

User entry Signed floating-point number

* Visibility depends on order options or device settings

Factory setting Depends on country and nominal diameter

Additional information *Dependency*

 The entry depends on the process variable selected in the **Assign freq.** parameter (→  114).

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 (→  109) and a process variable is selected in the **Assign freq.** parameter (→  114).

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 *Description*

Use this function to enter the maximum measured value at the maximum frequency. The selected process variable is output as a proportional frequency.

Dependency

 The entry depends on the process variable selected in the **Assign freq.** parameter (→  114).

Measuring mode

Navigation   Expert → Output → PFS output 1 to n → Measuring mode (0479–1 to n)

Prerequisite In the **Assign curr.** parameter (→  95), one of the following options is selected:

- Volume flow
- Mass flow
- Correct.vol.flow
- Flow velocity
- Conductivity^{*}
- CorrConductivity^{*}
- Temperature^{*}
- Electronic temp.

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

Selection

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

* Visibility depends on order options or device settings

Factory setting Forward flow

Additional information *Selection*

 For a detailed description of the options available, see the **Measuring mode** parameter (→  99)

Examples

 For a detailed description of the configuration examples, see the **Measuring mode** parameter (→  99)

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 **Assign curr.** parameter (→  95), one of the following options is selected:

- Volume flow
- Mass flow
- Correct.vol.flow
- Flow velocity
- Conductivity^{*}
- CorrConductivity^{*}
- Temperature^{*}
- Electronic temp.

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 *User entry*

Use this function to enter a time constant (PT1 element⁴⁾) 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.

^{*} Visibility depends on order options or device settings

⁴⁾ proportional transmission behavior with first order delay

Response time

Navigation	 Expert → Output → PFS output 1 to n → Response time (0491-1 to n)
Prerequisite	In the Assign curr. parameter (→  95), one of the following options is selected: ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Flow velocity ■ Conductivity[*] ■ CorrConductivity[*] ■ Temperature[*] ■ Electronic temp.
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	<i>Description</i>  The response time is made up of the time specified for the following dampings: ■ Damping of pulse/frequency/switch output →  104 and ■ Depending on the measured variable assigned to the output. Flow 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 (→  109) and a process variable is selected in the Assign freq. parameter (→  114).
Description	Use this function to select the failure mode of the frequency output in the event of a device alarm.
Selection	■ Actual value ■ Defined value ■ 0 Hz
Factory setting	0 Hz

* Visibility depends on order options or device settings

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. (→  119) 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 (→  109) and a process variable is selected in the Assign freq. parameter (→  114).
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 (→  109), 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 (→  109).

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 (→ 109), the Switch option is selected. ■ In the Switch out funct parameter (→ 119), 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 (→ 109) parameter.
- The **Limit** option is selected in the **Switch out funct** parameter (→ 119) parameter.

Description

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

Selection

- Off
- Volume flow
- Mass flow
- Correct.vol.flow
- Flow velocity
- Conductivity *
- CorrConductivity *
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Temperature *
- Electronic temp.

Factory setting

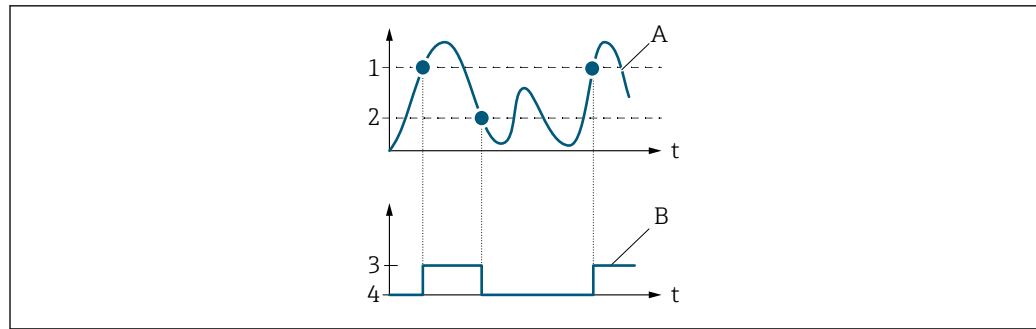
Volume flow

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

* Visibility depends on order options or device settings

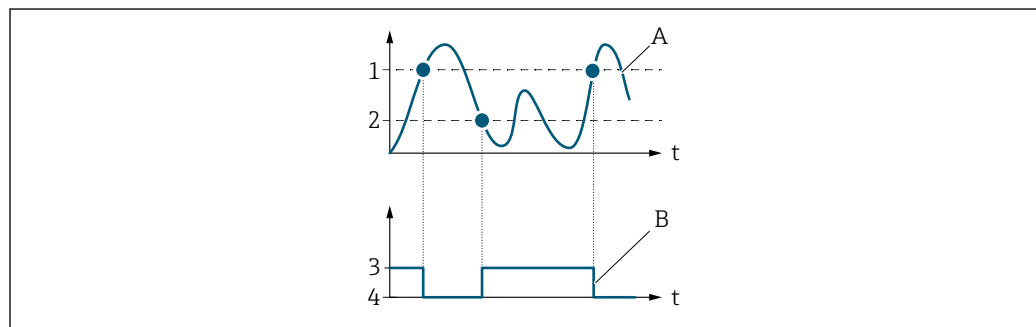


A0026891

- 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

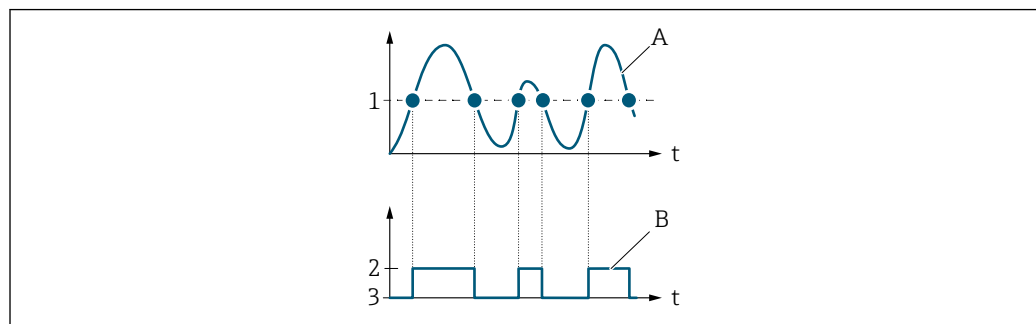


A0026892

- 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 (→  109), the Switch option is selected. ■ In the Switch out funct parameter (→  119), 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 l/h ■ 0 gal/min (us)
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 (→  121).
Switch-off value 	
Navigation	  Expert → Output → PFS output 1 to n → Switch-off value (0464–1 to n)
Prerequisite	■ In the Operating mode parameter (→  109), the Switch option is selected. ■ In the Switch out funct parameter (→  119), 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 l/h ■ 0 gal/min (us)
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 (→  121).

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 (→  109). ■ The Fl. direct.check option is selected in the Switch out funct parameter (→  119).
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	Volume 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 (→  109). ■ The Status option is selected in the Switch out funct parameter (→  119).
Description	Use this function to select a device status for the switch output.
Selection	■ Partial pipe det ■ Low flow cut off ■ Digital outp. 3[*]
Factory setting	Partial pipe det
Additional information	<i>Options</i> 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 (→  109). ■ The Limit option is selected in the Switch out funct parameter (→  119).
Description	Use this function to enter a delay time for switching on the switch output.
User entry	0.0 to 100.0 s

* Visibility depends on order options or device settings

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 (→ 109).
- The **Limit** option is selected in the **Switch out funct** parameter (→ 119).

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 (→ 109).

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

■

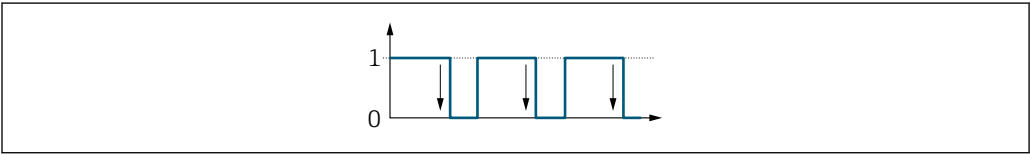
 Yes

Factory setting No

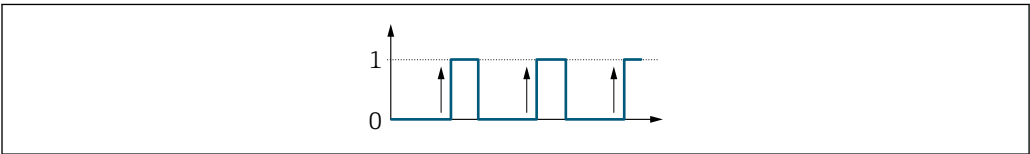
Additional information

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.

→ 127

Relay outp.func.

→ 127

Assign dir.check	→  128
Assign limit	→  128
Assign diag. beh	→  129
Assign status	→  129
Switch-off value	→  130
Switch-off delay	→  130
Switch-on value	→  131
Switch-on delay	→  131
Failure mode	→  131
Switch status	→  132
Powerless relay	→  132

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 (→ 127), 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	Volume 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 (→ 127) parameter.
Description	Use this function to select a process variable for the limit value function.
Selection	■ Off ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Flow velocity

- Conductivity *
- CorrConductivity *
- Totalizer 1
- Totalizer 2
- Totalizer 3
- Temperature *
- Electronic temp.

Factory setting Volume 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 (→  127), 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 (→  127), the **Digital Output** option is selected.

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

* Visibility depends on order options or device settings

- Selection**
- Partial pipe det
 - Low flow cut off
 - Digital outp. 3^{*}

Factory setting Partial pipe det

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 (→  127), 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 l/h
 ■ 0 gal(us)/min

Additional information *Description*
 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.
 Dependency
  The unit is dependent on the process variable selected in the **Assign limit** parameter (→  128).

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 (→  127), 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

* Visibility depends on order options or device settings

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 (→  127), 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 l/h ■ 0 gal(us)/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 is dependent on the process variable selected in the Assign limit parameter (→  128).

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 (→  127), 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	<i>Selection</i> ■ 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 *User interface*

- 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 *Selection*

- Open
The relay output is not conductive.
- Closed
The relay output is conductive.

3.6 "Communication" submenu

Navigation   Expert → Communication

► Communication	
► PROFIBUS PA conf	→  133
► PROFIBUS PA info	→  135
► Physical block	→  136
► Web server	→  146
► WLAN settings	→  149

3.6.1 "PROFIBUS PA conf" submenu

Navigation   Expert → Communication → PROFIBUS PA conf

► PROFIBUS PA conf	
Address mode (1468)	→  133
Device address (1462)	→  134
Ident num select (1461)	→  134

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	<i>Description</i> 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 (→  133)
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) ■ 3AI,1Tot(0x9742) ■ Promag 50 ■ Promag 53
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)	→ 	135
Ident number (1464)	→ 	135
Profile version (1463)	→ 	135
Baudrate (1504)	→ 	136
Master avail. (1517)	→ 	136

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	0x156C

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)

→  137

Static revision (1495)

→  138

Strategy (1494)

→  138

Alert key (1473)

→  138

Target mode (1497)

→  138

Mode block act (1472)

→  139

Mode block perm (1493)

→  139

Mode blk norm (1492)	→  139
Alarm summary (1474)	→  139
Software rev. (1478)	→  140
Hardware rev. (1479)	→  140
Manufacturer ID (1502)	→  141
Device ID (1480)	→  141
Serial number (1481)	→  141
Diagnostics (1482)	→  141
Diagnostics mask (1484)	→  142
Device certific. (1486)	→  143
Factory reset (1488)	→  143
Descriptor (1489)	→  143
Device message (1490)	→  143
Device inst.date (1491)	→  144
Ident num select (1461)	→  144
Hardware lock (1499)	→  144
Feature support (1477)	→  145
Feature enabled (1476)	→  145
Condensed status (1500)	→  145

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	Promag 300 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 (→  138).
User interface	■ Auto ■ Out of service
Additional information	<i>Description</i>  A comparison of the current mode with the target mode (Target mode parameter (→  138)) 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 (→  138) 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
- Alm stat Hi lim
Upper warning limit
- Alm statLoLo lim
Lower alarm limit
- Alm 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 (→  139), 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 (→  139) 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	Promag300/500PA

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	<i>Description</i>  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
- 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.

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. @, %, /).

* Visibility depends on order options or device settings

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. @, %, /).

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)
- 3AI,1Tot(0x9742)
- Promag 50
- Promag 53

Factory setting Automatic mode

Additional information *Description*

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*Description*

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.

User interface

- 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)	→ 	146
MAC Address (7214)	→ 	147
DHCP client (7212)	→ 	147
IP address (7209)	→ 	147
Subnet mask (7211)	→ 	148
Default gateway (7210)	→ 	148
Webserver funct. (7222)	→ 	148
Login page (7273)	→ 	149

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 ⁵⁾ 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

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 (→  147), Subnet mask (→  148) and Default gateway (→  148) 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

5) Media Access Control

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 (→  148).

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)	→	150
WLAN mode (2717)	→	150
SSID name (2714)	→	151
Network security (2705)	→	151
Sec. identific. (2718)	→	151
User name (2715)	→	152
WLAN password (2716)	→	152

WLAN IP address (2711)	→ ⓘ 152
WLAN MAC address (2703)	→ ⓘ 152
WLAN subnet mask (2709)	→ ⓘ 153
WLAN MAC address (2703)	→ ⓘ 152
WLAN passphrase (2706)	→ ⓘ 153
Assign SSID name (2708)	→ ⓘ 153
SSID name (2707)	→ ⓘ 154
WLAN channel (2704)	→ ⓘ 154
Select antenna (2713)	→ ⓘ 154
Connection state (2722)	→ ⓘ 155
Rec.sig.strength (2721)	→ ⓘ 155
WLAN IP address (2711)	→ ⓘ 152
Gateway IP addr. (2719)	→ ⓘ 155
IP address DNS (2720)	→ ⓘ 155

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).

* Visibility depends on order options or device settings

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	–
------------------------	---

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 ⁶⁾ address of the measuring device.
--------------------	---

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

6) Media Access Control

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)

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 (→  151).

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 ⁷⁾.

Selection

- Device tag
- User-defined

Factory setting User-defined

⁷⁾ Service Set Identifier

Additional information	<i>Selection</i> ■ 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 (→  153) parameter. ■ The Access point option is selected in the WLAN mode parameter (→  150) 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
Factory setting	EH_device designation_last 7 digits of the serial number (e.g. EH_Promag_300_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	<i>Description</i>  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

→  156

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)

→  156

PV filter time (1524–1 to n)

→  157

Fail safe type (1525–1 to n)

→  157

Fail-safe value (1526–1 to n)

→  157

Out value (1552–1 to n)

→  158

Out status (1564–1 to n)

→  158

Out status (1549–1 to n)

→  158

Channel

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

Description For selecting the process variable.

- Selection
- Volume flow
 - Mass flow
 - Correct.vol.flow
 - Flow velocity
 - Conductivity*
 - CorrConductivity*
 - Temperature
 - Electronic temp.*
 - Current input 1*
 - Current input 2*
 - Current input 3*

* Visibility depends on order options or device settings

Factory setting Volume 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.

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 (→  157).
- 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 (→  157), 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 (→  158)) 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 (→  159), 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 (→  159), 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 (→  159).
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 (→  159)) 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 (→  159) 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 ■ 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 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	<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.

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 (→  166)).

User entry Signed floating-point number

Factory setting Positive floating-point number

Additional information *Description*

 If the output value Out value (→  158) exceeds this limit value, the **HiHi alarm state** parameter (→  166) is output.

User entry

 The value is entered in the defined units (**Out unit** parameter (→  163)) and must be in the range defined in the **Out scale low** parameter (→  162) and **Out scale up** parameter (→  163).

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 (→  166)).

User entry Signed floating-point number

Factory setting Positive floating-point number

Additional information*Description*

If the output value Out value (→ 158) exceeds this limit value, the **Hi alarm state** parameter (→ 166) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 163)) and must be in the range defined in the **Out scale low** parameter (→ 162) and **Out scale up** parameter (→ 163).

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 (→ 167)).

User entry

Signed floating-point number

Factory setting

Negative floating-point number

Additional information*Description*

If the output value Out value (→ 158) exceeds this limit value, the **Lo alarm state** parameter (→ 167) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 163)) and must be in the range defined in the **Out scale low** parameter (→ 162) and **Out scale up** parameter (→ 163).

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 (→ 167)).

User entry

Signed floating-point number

Factory setting

Negative floating-point number

Additional information*Description*

If the output value Out value (→ 158) exceeds this limit value, the **LoLo alarm state** parameter (→ 167) is output.

User entry

The value is entered in the defined units (**Out unit** parameter (→ 163)) and must be in the range defined in the **Out scale low** parameter (→ 162) and **Out scale up** parameter (→ 163).

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 (→  164)).
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 (→  164)).
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 → 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 (→  164)).
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 (→  164)).
User interface	■ No warning ■ Alm 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 → 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 (→  165)).
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 (→  165)).
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 → 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 (→  165)).
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 (→  165)).
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.

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 → 169

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) → 170

Invert (2188-1 to n) → 170

Fail safe type (2189-1 to n) → 170

Fail-safe value (2190-1 to n) → 171

Out value (2194-1 to n) → 171

Out status (2203-1 to n) → 171

Out status (2193-1 to n) → 171

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[*]
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	<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 (→  171). ■ 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.

* Visibility depends on order options or device settings

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 (→  170), 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 (→  171)) 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 (→  173), 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 (→  173), 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 (→  173).
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 (→  173)) 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 (→  173) 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	<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 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

→ 176

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)

→ 177

Set point status (1660-1 to n)	→  177
Fail safe time (1635-1 to n)	→  177
Fail safe type (1636-1 to n)	→  178
Fail-safe value (1637-1 to n)	→  178
Out value (1647-1 to n)	→  179
Out status (1669-1 to n)	→  179
Out status (1645-1 to n)	→  179

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 *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 → 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 *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 (→ 178).
- 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 (→ 178), 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 (→ 179)) 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 (→  180), 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 (→  180), 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 (→  180).
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 (→  180)) 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 (→  180) 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 ■ 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 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	<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.

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 (→  184). 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 (→ 184).
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. ■ External density
Factory setting	External temp.

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 (→  177)) and the actual value (Readback value parameter (→  184)).
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 *Description*

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 *Description*

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 *Description*

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

→ 188

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)

→ 189

Set point status (1714-1 to n)

→ 189

Invert (1692-1 to n)

→ 189

Fail safe time (1697-1 to n)

→ 190

Fail safe type (1696-1 to n)

→ 190

Fail-safe value (1693-1 to n)	→  191
Out value (1704-1 to n)	→  191
Out status (1723-1 to n)	→  191
Out status (1703-1 to n)	→  191

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	<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 → 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	<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 (→  191). ■ 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 (→  190), 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 (→  191)) 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 (→  193), 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 (→  193), 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 (→  193).
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 (→  193)) 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 (→  193) 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 (→  196). 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 (→  196).

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	■ Flow override ■ Start verificat. * ■ I/O module 2
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

* Visibility depends on order options or device settings

Additional information

Description

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 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

Description

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

Description

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

→ 199

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)	→ 	199
Unit totalizer (3835-1 to n)	→ 	200
Control Tot. 1 to n (3830-1 to n)	→ 	201
Preset value 1 to n (3829-1 to n)	→ 	201
Operation mode (3823-1 to n)	→ 	202
Failure mode (3810-1 to n)	→ 	202
Totalizer val. 1 to n (3827-1 to n)	→ 	203
Tot. status 1 to n (3826-1 to n)	→ 	203
Status (Hex) 1 to n (3825-1 to n)	→ 	203

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	■ Volume flow ■ Mass flow ■ Correct.vol.flow
Factory setting	Volume 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 (→  53).

- Selection**
- | <i>SI units</i> | <i>US units</i> |
|-------------------|---------------------|
| ■ g [*] | ■ oz [*] |
| ■ kg [*] | ■ lb [*] |
| ■ t [*] | ■ STon [*] |

* Visibility depends on order options or device settings

or

- | <i>SI units</i> | <i>US units</i> | <i>Imperial units</i> |
|--------------------------------|--------------------------------|-------------------------------|
| ■ cm ³ [*] | ■ af [*] | ■ gal (imp) [*] |
| ■ dm ³ [*] | ■ ft ³ [*] | ■ Mgal (imp) [*] |
| ■ m ³ [*] | ■ fl oz (us) [*] | ■ bbl (imp;beer) [*] |
| ■ ml [*] | ■ gal (us) [*] | ■ bbl (imp;oil) [*] |
| ■ l [*] | ■ kgal (us) [*] | |
| ■ hl [*] | ■ Mgal (us) [*] | |
| ■ Ml Mega [*] | ■ bbl (us;liq.) [*] | |
| | ■ bbl (us;beer) [*] | |
| | ■ bbl (us;oil) [*] | |
| | ■ bbl (us;tank) [*] | |

* Visibility depends on order options or device settings

or

- | <i>SI units</i> | <i>US units</i> | <i>Imperial units</i> |
|--------------------------------|---------------------------------|-------------------------|
| ■ NI [*] | ■ Sft ³ [*] | Sgal (imp) [*] |
| ■ Nm ³ [*] | ■ Sgal (us) [*] | |
| ■ Sl [*] | ■ Sbbl (us;liq.) [*] | |
| ■ Sm ³ [*] | | |

* Visibility depends on order options or device settings

Factory setting Country-specific:
■ m³
■ ft³

Additional information *Selection*

The selection is independent of the process variable selected in the **Assign variable** parameter (→  199).

Dependency

The following parameters depend on the option selected:

- **Alarm hysteresis** parameter (→  207)
- **Hi Hi Lim** parameter (→  208)
- **Hi Lim** parameter (→  208)
- **Lo Lim** parameter (→  209)

- **Lo Lo Lim** parameter (→  209)
- **Totalizer val.** parameter (→  203)
- **Preset value** parameter (→  201)

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	<i>Selection</i> ■ 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: ■ m³ ■ ft³
Additional information	<i>User entry</i>  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  200). <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 (→  205), 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 (→  202). <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 (→  202). <i>Dependency</i>  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  200).

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 (→  205), 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 *Description*

 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 (→  205).
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 (→  205)) 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 (→  205) 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	<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 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	<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.

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 m ³
Additional information	<i>User entry</i>  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  200).

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 (→  210)).
User entry	Signed floating-point number
Factory setting	Positive floating-point number
Additional information	<i>Description</i>  If the output value Out value (→  158) exceeds this limit value, the HiHi alarm state parameter (→  210) is output. <i>User entry</i>  The value is entered in the defined units (Out unit parameter (→  163)) and must be in the range defined in the Out scale low parameter (→  162) and Out scale up parameter (→  163).  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  200).

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 (→  210)).
User entry	Signed floating-point number
Factory setting	Positive floating-point number
Additional information	<i>Description</i>  If the output value Out value (→  158) exceeds this limit value, the Hi alarm state parameter (→  210) is output. <i>User entry</i>  The value is entered in the defined units (Out unit parameter (→  163)) and must be in the range defined in the Out scale low parameter (→  162) and Out scale up parameter (→  163).  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  200).

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 (→  211)).
User entry	Signed floating-point number
Factory setting	Negative floating-point number
Additional information	<i>Description</i>  If the output value Out value (→  158) exceeds this limit value, the Lo alarm state parameter (→  211) is output. <i>User entry</i>  The value is entered in the defined units (Out unit parameter (→  163)) and must be in the range defined in the Out scale low parameter (→  162) and Out scale up parameter (→  163).  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  200).
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 (→  211)).
User entry	Signed floating-point number
Factory setting	Negative floating-point number
Additional information	<i>Description</i>  If the output value Out value (→  158) exceeds this limit value, the LoLo alarm state parameter (→  211) is output. <i>User entry</i>  The value is entered in the defined units (Out unit parameter (→  163)) and must be in the range defined in the Out scale low parameter (→  162) and Out scale up parameter (→  163).  The unit of the selected process variable is specified for the totalizer in the Unit totalizer parameter (→  200).

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 (→  208)).
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 (→  208)).
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 (→  208)).
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 (→  208)).
User interface	■ No warning ■ Alm 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 (→  209)).
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 (→  209)).
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 (→  209)).
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 (→  209)).
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.

3.12 "Diagnostics" submenu

Navigation  Expert → Diagnostics

► Diagnostics		
Actual diagnos. (0691)	→ 	212
Prev.diagnostics (0690)	→ 	213
Time fr. restart (0653)	→ 	214
Operating time (0652)	→ 	214
► Diagnostic list	→ 	215
► Event logbook	→ 	219
► Device info	→ 	221
► Mainboard module	→ 	225
► Sens. electronic	→ 	226
► I/O module 1	→ 	227
► I/O module 2	→ 	227
► Display module	→ 	229
► Min/max val.	→ 	237
► Data logging	→ 	230
► Heartbeat	→ 	240
► Simulation	→ 	240

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*Display*

Additional pending diagnostic messages can be viewed in the **Diagnostic list** submenu (→ 215).



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 current diagnostic message occurred.

User interface

Days (d), hours (h), minutes (m) and seconds (s)

Additional information*Display*

The diagnostic message can be viewed via the **Actual diagnos.** parameter (→ 212).

Example

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	<i>Display</i>  The diagnostic message can be viewed via the Prev.diagnostics parameter (→  213). <i>Example</i> 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	<i>User interface</i> 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)	→ 	215
Diagnostics 2 (0693)	→ 	216
Diagnostics 3 (0694)	→ 	217
Diagnostics 4 (0695)	→ 	217
Diagnostics 5 (0696)	→ 	218

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 (→  215).

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 (→  216).

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 (→  217). <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 (→  217).

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	<i>Display</i>  The diagnostic message can be viewed via the Diagnostics 5 parameter (→  218).
<i>Example</i> For the display format: 24d12h13m00s	

3.12.2 "Event logbook" submenu

Navigation  Expert → Diagnostics → Event logbook

► Event logbook

Filter options (0705) →  219

► Event list →  220

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 →  221

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 (→  219).
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

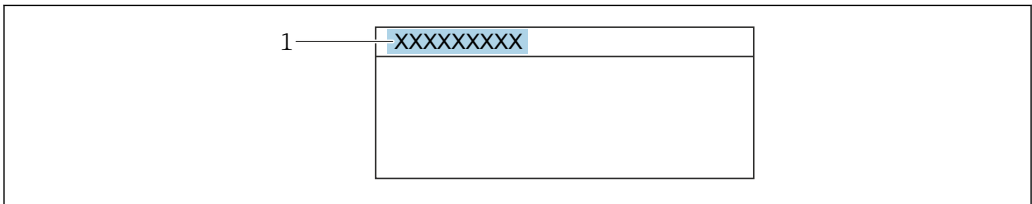
Navigation  Expert → Diagnostics → Device info

► Device info		
Device tag (0011)	→ 	222
Serial number (0009)	→ 	222
Firmware version (0010)	→ 	223
Device name (0020)	→ 	223
Order code (0008)	→ 	223

Ext. order cd. 1 (0023)	→ ⓘ 224
Ext. order cd. 2 (0021)	→ ⓘ 224
Ext. order cd. 3 (0022)	→ ⓘ 224
ENP version (0012)	→ ⓘ 224

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	Promag 300 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. i 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 i 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 *Display*



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 Promag 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 *Description*



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 (→  224)	
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 (→  224)	
ENP version		
Navigation	  Expert → Diagnostics → Device info → ENP version (0012)	
Description	Displays the version of the electronic nameplate.	
User interface	Character string	

Factory setting	2.02.00
Additional information	<i>Description</i> 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.

→  225

→  225

→  225

Software rev.

Navigation	 Expert → Diagnostics → Main elec.+I/O1 → 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 → Main elec.+I/O1 → 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 → Main elec.+I/O1 → Bootloader rev. (0073)
Description	Use 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)

→  226

→  226

→  226

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)

→  227

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

Software rev.

Build no. softw.

Bootloader rev.

→  228

→  228

→  228

→  228

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)

→  229

→  229

→  229

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 "Data logging" submenu

Navigation  Expert → Diagnostics → Data logging

► Data logging		
Assign chan. 1	→	 230
Assign chan. 2	→	 231
Assign chan. 3	→	 231
Assign chan. 4	→	 232
Logging interval	→	 232
Clear logging	→	 233
Data logging	→	 233
Logging delay	→	 234
Data log.control	→	 234
Data log. status	→	 234
Logging duration	→	 235
► Displ.channel 1	→	 235
► Displ.channel 2	→	 236
► Displ.channel 3	→	 237
► Displ.channel 4	→	 237

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 (→  42).

Description Use this function to select a process variable for the data logging channel.

Selection	■ Off ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Flow velocity * ■ Conductivity * ■ CorrConductivity * ■ Temperature * ■ Electronic temp. * ■ Curr.output 1 *
Factory setting	Off
Additional information	<i>Description</i> 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.

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 (→  42).
Description	Options for the assignment of a process variable to the data logging channel.
Selection	Picklist, see Assign channel 1 parameter (→  230)
Factory setting	Off

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 (→  42).

* Visibility depends on order options or device settings

Description Options for the assignment of a process variable to the data logging channel.

Selection Picklist, see **Assign channel 1** parameter (→  230)

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 (→  42).

Description Options for the assignment of a process variable to the data logging channel.

Selection Picklist, see **Assign channel 1** parameter (→  230)

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 (→  42).

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 *Description*

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.

Example

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 (→ 42).

Description

Use this function to clear the entire logging data.

Selection

- Cancel
- Clear data

Factory setting

Cancel

Additional information

Selection

- 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 (→  233), 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	<i>Description</i> Once measured value logging has been started with the Data log.control parameter (→  234), 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 (→  233), 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	<i>Selection</i> ■ 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 (→  233), 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 (→  233), 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

→  235

Display channel 1

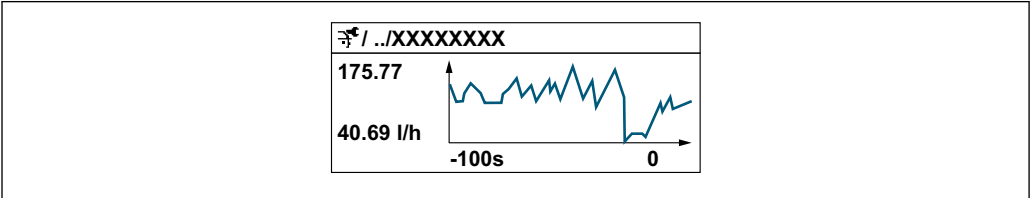
Navigation	 Expert → Diagnostics → Data logging → Displ.channel 1
Prerequisite	The Extended HistorOM application package is available.  The software options currently enabled are displayed in the SW option overv. parameter (→  42).

One of the following options is selected in the **Assign chan. 1** parameter (→ 230):

- Conductivity*
- CorrConductivity*
- Temperature*

Description Displays the measured value trend for the logging channel in the form of a chart.

Additional information *Description*



A0034352

10 Chart of a measured value trend

- 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 → 236

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 → 235

* Visibility depends on order options or device settings

"Displ.channel 3" submenu

Navigation  Expert → Diagnostics → Data logging → Displ.channel 3

► Displ.channel 3

Display channel 3

→  237

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 →  235

"Displ.channel 4" submenu

Navigation  Expert → Diagnostics → Data logging → Displ.channel 4

► Displ.channel 4

Display channel 4

→  237

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 →  235

3.12.10 "Min/max val." submenu

Navigation   Expert → Diagnostics → Min/max val.

► Min/max val.

Reset min/max (6541)

→  238

► Main elect.temp.	→ 238
► Temperature	→ 239

Reset min/max



Navigation	Expert → Diagnostics → Min/max val. → Reset min/max (6541)
Description	Use this function to select measured variables whose minimum, maximum and average measured values are to be reset.
Selection	■ Cancel ■ Terminal volt. ■ IO module temp.
Factory setting	Cancel

"Main elect.temp." submenu

Navigation Expert → Diagnostics → Min/max val. → Main elect.temp.

► Main elect.temp.	
Minimum value (6547)	→ 238
Maximum value (6545)	→ 239

Minimum value

Navigation	Expert → Diagnostics → Min/max val. → Main elect.temp. → Minimum value (6547)
Description	Displays the lowest previously measured temperature value of the main electronics module.
User interface	Signed floating-point number
Additional information	Dependency The unit is taken from the Temperature unit parameter (→ 56)

Maximum value

Navigation	  Expert → Diagnostics → Min/max val. → Main elect.temp. → Maximum value (6545)
Description	Displays the highest previously measured temperature value of the main electronics module.
User interface	Signed floating-point number
Additional information	<i>Dependency</i>  The unit is taken from the Temperature unit parameter (→  56)

"Temperature" submenu

Navigation   Expert → Diagnostics → Min/max val. → Temperature

► Temperature	
Minimum value (6681)	→  239
Maximum value (6680)	→  240

Minimum value

Navigation	  Expert → Diagnostics → Min/max val. → Temperature → Minimum value (6681)
Prerequisite	One of the following conditions is met: ■ Order code for "Sensor option", option CI "Medium temperature measurement" or ■ The temperature is read into the flowmeter from an external device.
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 (→  56)

Maximum value

Navigation	 Expert → Diagnostics → Min/max val. → Temperature → Maximum value (6680)
Prerequisite	One of the following conditions is met: ▪ Order code for "Sensor option", option CI "Medium temperature measurement" or ▪ The temperature is read into the flowmeter from an external device.
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 (→  56)

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

► Monitor. results

3.12.12 "Simulation" submenu

Navigation  Expert → Diagnostics → Simulation

► Simulation

Assign proc.var. (1810)

→  241

Proc. var. value (1811)

→  242

Status inp. sim. (1355)

→  242

Signal level (1356)	→ ⓘ 243
Curr.inp 1 to n sim. (1608-1 to n)	→ ⓘ 243
Value curr.inp 1 to n (1609-1 to n)	→ ⓘ 244
Curr.out. 1 to n sim. (0354-1 to n)	→ ⓘ 244
Value curr.out 1 to n (0355-1 to n)	→ ⓘ 244
FreqOutputSim 1 to n (0472-1 to n)	→ ⓘ 245
Freq value 1 to n (0473-1 to n)	→ ⓘ 245
Puls.outp.sim. 1 to n (0458-1 to n)	→ ⓘ 246
Pulse value 1 to n (0459-1 to n)	→ ⓘ 246
Switch sim. 1 to n (0462-1 to n)	→ ⓘ 246
Switch status 1 to n (0463-1 to n)	→ ⓘ 247
Relay out. 1 to n sim (0802-1 to n)	→ ⓘ 247
Switch status 1 to n (0803-1 to n)	→ ⓘ 248
Dev. alarm sim. (0654)	→ ⓘ 248
Event category (0738)	→ ⓘ 249
Diag. event sim. (0737)	→ ⓘ 249

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 ■ Volume flow ■ Mass flow ■ Correct.vol.flow ■ Flow velocity

- Conductivity^{*}
- CorrConductivity^{*}
- Temperature^{*}

Factory setting Off

Additional information *Description*

 The simulation value of the process variable selected is defined in the **Proc. var. value** parameter (→  242).

Proc. var. value

Navigation   Expert → Diagnostics → Simulation → Proc. var. value (1811)

Prerequisite A process variable is selected in the **Assign proc.var.** parameter (→  241).

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

Additional information *User entry*

 The unit of the displayed measured value is taken from the **System units** submenu (→  53).

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

* Visibility depends on order options or device settings

Additional information*Description*

The desired simulation value is defined in the **Signal level** parameter (→ 243).

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 (→ 242), 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*Selection*

- 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 (→  96).
FreqOutputSim 1 to n 	
Navigation	  Expert → Diagnostics → Simulation → FreqOutputSim 1 to n (0472–1 to n)
Prerequisite	In the Operating mode parameter (→  109), 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	<i>Description</i>  The desired simulation value is defined in the Freq value 1 to n parameter. <i>Selection</i> ■ 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 (→  109), 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	<i>Description</i>  The desired simulation value is defined in the Pulse value 1 to n parameter. <i>Selection</i> ■ 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 (→  112). ■ Down-count. val. The pulses specified in the Pulse value parameter (→  246) 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 (→  109), 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 (→  249).
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 (→  249).

4 Country-specific factory settings

4.1 SI units

 Not valid for USA and Canada.

4.1.1 System units

Volume flow	l/h
Volume	m ³
Conductivity	µS/cm
Temperature	°C
Mass flow	kg/h
Mass	kg
Density	kg/l
Corrected volume flow	NI/h
Corrected volume	Nm ³

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]	(v ~ 2.5 m/s) [dm ³ /min]
2	0.5
4	2
8	8
15	25
25	75
32	125
40	200
50	300
65	500
80	750
100	1200
125	1850
150	150 m ³ /h
200	300 m ³ /h
250	500 m ³ /h
300	750 m ³ /h
350	1000 m ³ /h
400	1200 m ³ /h
450	1500 m ³ /h

Nominal diameter [mm]	($v \sim 2.5 \text{ m/s}$) [dm ³ /min]
500	2 000 m ³ /h
600	2 500 m ³ /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]	($\sim 2 \text{ pulse/s}$) [dm ³]
2	0.005
4	0.025
8	0.1
15	0.2
25	0.5
32	1
40	1.5
50	2.5
65	5
80	5
100	10
125	15
150	0.03 m ³
200	0.05 m ³
250	0.05 m ³
300	0.1 m ³
350	0.1 m ³
400	0.15 m ³
450	0.25 m ³
500	0.25 m ³
600	0.3 m ³

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]	($v \sim 0.04 \text{ m/s}$) [m ³ /h]
2	0.01
4	0.05
8	0.1
15	0.5
25	1

Nominal diameter [mm]	(v ~ 0.04 m/s) [m³/h]
32	2
40	3
50	5
65	8
80	12
100	20
125	30
150	2.5
200	5
250	7.5
300	10
350	15
400	20
450	25
500	30
600	40

4.2 US units

 Only valid for USA and Canada.

4.2.1 System units

Volume flow	gal/min (us)
Volume	gal (us)
Temperature	°F
Mass flow	lb/min
Mass	lb
Density	lb/ft³
Corrected volume flow	Sft³/h
Corrected volume	Sft³

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]	(v ~ 2.5 m/s) [gal/min]
1/12	0.1
1/8	0.5
3/8	2
1/2	6

Nominal diameter [in]	(v ~ 2.5 m/s) [gal/min]
1	18
1½	50
2	75
3	200
4	300
5	450
6	600
8	1200
10	1500
12	2400
14	3600
15	4800
16	4800
18	6000
20	7500
24	10500

4.2.3 Output current span

Current output 1 to n	4 to 20 mA US
-----------------------	---------------

4.2.4 Pulse value

Nominal diameter [in]	(~ 2 pulse/s) [gal]
1/12	0.001
1/8	0.005
3/8	0.02
1/2	0.1
1	0.2
1½	0.5
2	0.5
3	2
4	2
5	5
6	5
8	10
10	15
12	25
14	30
15	50
16	50
18	50

Nominal diameter [in]	(~ 2 pulse/s) [gal]
20	75
24	100

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]	(v ~ 0.04 m/s) [gal/min]
1/12	0.002
1/8	0.008
3/8	0.025
1/2	0.15
1	0.25
1 1/2	0.75
2	1.25
3	2.5
4	4
5	7
6	12
8	15
10	30
12	45
14	60
15	60
16	60
18	90
20	120
24	180

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).
Conductivity	μS/mm	Microsiemens/length unit
	nS/cm, μS/cm, mS/cm, S/cm	Nano-, Micro-, Milli-, Siemens/length unit
	μS/m, mS/m, S/m, kS/m, MS/m	Micro-, Milli-, Siemens, Kilo-, Megasiemens/length unit
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
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
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
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
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

Process variable	Units	Explanation
	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) 90, 97
- 0% bargraph value 1 (Parameter) 18
- 0% bargraph value 3 (Parameter) 21
- 2.4 GHz WLAN channel (Parameter) 154
- 20 mA value (Parameter) 90, 99
- 100% bargraph value 1 (Parameter) 19
- 100% bargraph value 3 (Parameter) 22

A

- Access status (Parameter) 13
- Activate SW option (Parameter) 41
- Active level (Parameter) 93
- Actual diagnostics (Parameter) 212
- Address mode (Parameter) 133
- Administration (Submenu) 38
- Alarm delay (Parameter) 30
- Alarm hysteresis (Parameter) 164, 207
- Alarm summary (Parameter) 139, 160, 174, 182, 194, 206
- Alert key (Parameter) ... 138, 159, 172, 180, 192, 204
- Alteration code (Parameter) 88
- Analog input 1 to n (Submenu) 156
- Analog inputs (Submenu) 156
- Analog output 1 to n (Submenu) 176
- Analog outputs (Submenu) 176
- Application (Submenu) 198
- Apply I/O configuration (Parameter) 88
- Assign behavior of diagnostic no. 043 (Parameter) ... 32
- Assign behavior of diagnostic no. 302 (Parameter) ... 32
- Assign behavior of diagnostic no. 376 (Parameter) ... 32
- Assign behavior of diagnostic no. 377 (Parameter) ... 33
- Assign behavior of diagnostic no. 441 (Parameter) ... 33
- Assign behavior of diagnostic no. 442 (Parameter) ... 33
- Assign behavior of diagnostic no. 443 (Parameter) ... 34
- Assign behavior of diagnostic no. 444 (Parameter) ... 34
- Assign behavior of diagnostic no. 531 (Parameter) ... 34
- Assign behavior of diagnostic no. 832 (Parameter) ... 35
- Assign behavior of diagnostic no. 833 (Parameter) ... 35
- Assign behavior of diagnostic no. 834 (Parameter) ... 36
- Assign behavior of diagnostic no. 835 (Parameter) ... 36
- Assign behavior of diagnostic no. 842 (Parameter) ... 36
- Assign behavior of diagnostic no. 937 (Parameter) ... 37
- Assign behavior of diagnostic no. 938 (Parameter) ... 37
- Assign behavior of diagnostic no. 961 (Parameter) ... 37
- Assign behavior of diagnostic no. 962 (Parameter) ... 38
- Assign channel 1 (Parameter) 230
- Assign channel 2 (Parameter) 231
- Assign channel 3 (Parameter) 231
- Assign channel 4 (Parameter) 232
- Assign current output 1 to n (Parameter) 95
- Assign diagnostic behavior (Parameter) 120, 129
- Assign flow direction check (Parameter) 124, 128
- Assign frequency output (Parameter) 114
- Assign limit (Parameter) 121, 128
- Assign process variable (Parameter) 65, 199

- Assign pulse output 1 to n (Parameter) 111
- Assign simulation process variable (Parameter) 241
- Assign SSID name (Parameter) 153
- Assign status (Parameter) 124, 129
- Assign status input (Parameter) 92

B

- Backlight (Parameter) 26
- Backup state (Parameter) 28
- Batch ID (Parameter) 161, 174, 182, 194, 206
- Batch operation (Parameter) .. 161, 174, 182, 195, 206
- Batch phase (Parameter) 161, 175, 183, 195, 207
- Batch Recipe Unit Procedure (Parameter) 162, 175, 183, 195, 207
- Baudrate (Parameter) 136
- Bootloader revision (Parameter) 225, 226, 228, 229
- Build no. software (Parameter) 225, 226, 228, 229

C

- Calibration (Submenu) 85
- Calibration factor (Parameter) 85
- Channel (Parameter) 156, 170
- Clear logging data (Parameter) 233
- Communication (Submenu) 133
- Comparison result (Parameter) 29
- Condensed status diagnostic (Parameter) 145
- Conductivity (Parameter) 45
- Conductivity calibration factor (Parameter) 86
- Conductivity damping (Parameter) 63
- Conductivity factor (Parameter) 81
- Conductivity measurement (Parameter) 63
- Conductivity offset (Parameter) 81
- Conductivity temperature coefficient (Parameter) 64
- Conductivity unit (Parameter) 55
- Configuration backup (Submenu) 27
- Configuration management (Parameter) 27
- Confirm access code (Parameter) 39
- Connection state (Parameter) 155
- Contrast display (Parameter) 26
- Control Totalizer 1 to n (Parameter) 201
- Corrected conductivity (Parameter) 45
- Corrected conductivity factor (Parameter) 83
- Corrected conductivity offset (Parameter) 83
- Corrected volume flow (Parameter) 45
- Corrected volume flow factor (Parameter) 82
- Corrected volume flow offset (Parameter) 82
- Corrected volume flow unit (Parameter) 58
- Corrected volume unit (Parameter) 59
- Current input 1 to n (Submenu) 48, 88
- Current input 1 to n simulation (Parameter) 243
- Current output 1 to n (Submenu) 94
- Current output 1 to n simulation (Parameter) 244
- Current span (Parameter) 90, 96

D

- Damping output 1 to n (Parameter) 104, 117
- Data logging (Parameter) 233

Data logging (Submenu)	230
Data logging control (Parameter)	234
Data logging status (Parameter)	234
Date/time format (Parameter)	59
Decimal places 1 (Parameter)	19
Decimal places 2 (Parameter)	20
Decimal places 3 (Parameter)	22
Decimal places 4 (Parameter)	23
Default gateway (Parameter)	148
Define access code (Parameter)	39
Define access code (Wizard)	38
Density (Parameter)	46
Density source (Parameter)	73
Density unit (Parameter)	58
Descriptor (Parameter)	143
Device address (Parameter)	134
Device alarm simulation (Parameter)	248
Device certification (Parameter)	143
Device ID (Parameter)	141
Device information (Submenu)	221
Device install date (Parameter)	144
Device message (Parameter)	143
Device name (Parameter)	223
Device reset (Parameter)	41
Device tag (Parameter)	137, 222
DHCP client (Parameter)	147
Diagnostic behavior (Submenu)	30
Diagnostic event category (Parameter)	249
Diagnostic event simulation (Parameter)	249
Diagnostic handling (Submenu)	30
Diagnostic list (Submenu)	215
Diagnostics (Parameter)	141
Diagnostics (Submenu)	212
Diagnostics 1 (Parameter)	215
Diagnostics 2 (Parameter)	216
Diagnostics 3 (Parameter)	217
Diagnostics 4 (Parameter)	217
Diagnostics 5 (Parameter)	218
Diagnostics mask (Parameter)	142
Direct access	
0/4 mA value	
Current input 1 to n (1606–1 to n)	90
Current output 1 to n (0367–1 to n)	97
0% bargraph value 1 (0123)	18
0% bargraph value 3 (0124)	21
2.4 GHz WLAN channel (2704)	154
20 mA value	
Current input 1 to n (1607–1 to n)	90
Current output 1 to n (0372–1 to n)	99
100% bargraph value 1 (0125)	19
100% bargraph value 3 (0126)	22
Access status (0005)	13
Activate SW option (0029)	41
Active level	
Status input 1 to n (1351–1 to n)	93
Actual diagnostics (0691)	212
Address mode (1468)	133
Alarm delay (0651)	30

Alarm hysteresis	
Analog input 1 to n (1527–1 to n)	164
Totalizer 1 to n (3802–1 to n)	207
Alarm summary	
Analog input 1 to n (1537–1 to n)	160
Analog output 1 to n (1642–1 to n)	182
Discrete input 1 to n (2191–1 to n)	174
Discrete output 1 to n (1701–1 to n)	194
Totalizer 1 to n (3809–1 to n)	206
Alarm summary (1474)	139
Alert key	
Analog input 1 to n (1522–1 to n)	159
Analog output 1 to n (1632–1 to n)	180
Discrete input 1 to n (2182–1 to n)	172
Discrete output 1 to n (1694–1 to n)	192
Totalizer 1 to n (3803–1 to n)	204
Alert key (1473)	138
Alteration code (2762)	88
Apply I/O configuration (3907)	88
Assign behavior of diagnostic no. 043 (0650)	32
Assign behavior of diagnostic no. 302 (0739)	32
Assign behavior of diagnostic no. 376 (0645)	32
Assign behavior of diagnostic no. 377 (0777)	33
Assign behavior of diagnostic no. 441 (0657)	33
Assign behavior of diagnostic no. 442 (0658)	33
Assign behavior of diagnostic no. 443 (0659)	34
Assign behavior of diagnostic no. 444 (0740)	34
Assign behavior of diagnostic no. 531 (0741)	34
Assign behavior of diagnostic no. 832 (0681)	35
Assign behavior of diagnostic no. 833 (0682)	35
Assign behavior of diagnostic no. 834 (0700)	36
Assign behavior of diagnostic no. 835 (0702)	36
Assign behavior of diagnostic no. 842 (0638)	36
Assign behavior of diagnostic no. 937 (0743)	37
Assign behavior of diagnostic no. 938 (0642)	37
Assign behavior of diagnostic no. 961 (0736)	37
Assign behavior of diagnostic no. 962 (0745)	38
Assign channel 1 (0851)	230
Assign channel 2 (0852)	231
Assign channel 3 (0853)	231
Assign channel 4 (0854)	232
Assign current output 1 to n (0359–1 to n)	95
Assign diagnostic behavior	
Pulse/frequency/switch output 1 to n (0482–1 to n)	120
Relay output 1 to n (0806–1 to n)	129
Assign flow direction check	
Pulse/frequency/switch output 1 to n (0484–1 to n)	124
Relay output 1 to n (0808–1 to n)	128
Assign frequency output	
Pulse/frequency/switch output 1 to n (0478–1 to n)	114
Assign limit	
Pulse/frequency/switch output 1 to n (0483–1 to n)	121
Relay output 1 to n (0807–1 to n)	128
Assign process variable	
Totalizer 1 to n (3808–1 to n)	199

- Assign process variable (1837) 65
- Assign pulse output 1 to n (0460–1 to n) 111
- Assign simulation process variable (1810) 241
- Assign SSID name (2708) 153
- Assign status
 - Pulse/frequency/switch output 1 to n (0485–1 to n) 124
 - Relay output 1 to n (0805–1 to n) 129
- Assign status input
 - Status input 1 to n (1352–1 to n) 92
- Backlight (0111) 26
- Backup state (2759) 28
- Batch ID
 - Analog input 1 to n (1533–1 to n) 161
 - Analog output 1 to n (1633–1 to n) 182
 - Discrete input 1 to n (2183–1 to n) 174
 - Discrete output 1 to n (1695–1 to n) 194
 - Totalizer 1 to n (3804–1 to n) 206
- Batch operation
 - Analog input 1 to n (1534–1 to n) 161
 - Analog output 1 to n (1639–1 to n) 182
 - Discrete input 1 to n (2184–1 to n) 174
 - Discrete output 1 to n (1698–1 to n) 195
 - Totalizer 1 to n (3805–1 to n) 206
- Batch phase
 - Analog input 1 to n (1535–1 to n) 161
 - Analog output 1 to n (1640–1 to n) 183
 - Discrete input 1 to n (2185–1 to n) 175
 - Discrete output 1 to n (1699–1 to n) 195
 - Totalizer 1 to n (3806–1 to n) 207
- Batch Recipe Unit Procedure
 - Analog input 1 to n (1536–1 to n) 162
 - Analog output 1 to n (1641–1 to n) 183
 - Discrete input 1 to n (2186–1 to n) 175
 - Discrete output 1 to n (1700–1 to n) 195
 - Totalizer 1 to n (3807–1 to n) 207
- Baudrate (1504) 136
- Bootloader revision
 - I/O module 2 (0073) 228
 - I/O module 3 (0073) 228
 - I/O module 4 (0073) 228
- Bootloader revision (0073) 225, 226, 229
- Build no. software
 - I/O module 2 (0079) 228
 - I/O module 3 (0079) 228
 - I/O module 4 (0079) 228
- Build no. software (0079) 225, 226, 229
- Calibration factor (6522) 85
- Channel
 - Analog input 1 to n (1561–1 to n) 156
 - Discrete input 1 to n (2187–1 to n) 170
- Clear logging data (0855) 233
- Comparison result (2760) 29
- Condensed status diagnostic (1500) 145
- Conductivity (1850) 45
- Conductivity calibration factor (6718) 86
- Conductivity damping (1803) 63
- Conductivity factor (1849) 81
- Conductivity measurement (6514) 63
- Conductivity offset (1848) 81
- Conductivity temperature coefficient (1891) 64
- Conductivity unit (0582) 55
- Configuration management (2758) 27
- Connection state (2722) 155
- Contrast display (0105) 26
- Control Totalizer 1 to n (3830–1 to n) 201
- Corrected conductivity (1853) 45
- Corrected conductivity factor (1871) 83
- Corrected conductivity offset (1870) 83
- Corrected volume flow (1851) 45
- Corrected volume flow factor (1867) 82
- Corrected volume flow offset (1866) 82
- Corrected volume flow unit (0558) 58
- Corrected volume unit (0575) 59
- Current input 1 to n simulation (1608–1 to n) ... 243
- Current output 1 to n simulation (0354–1 to n) .. 244
- Current span
 - Current input 1 to n (1605–1 to n) 90
 - Current output 1 to n (0353–1 to n) 96
- Damping output 1 to n (0363–1 to n) 104
- Damping output 1 to n (0477–1 to n) 117
- Data logging (0860) 233
- Data logging control (0857) 234
- Data logging status (0858) 234
- Date/time format (2812) 59
- Decimal places 1 (0095) 19
- Decimal places 2 (0117) 20
- Decimal places 3 (0118) 22
- Decimal places 4 (0119) 23
- Default gateway (7210) 148
- Density (1857) 46
- Density source (6615) 73
- Density unit (0555) 58
- Descriptor (1489) 143
- Device address (1462) 134
- Device alarm simulation (0654) 248
- Device certification (1486) 143
- Device ID (1480) 141
- Device install date (1491) 144
- Device message (1490) 143
- Device name (0020) 223
- Device reset (0000) 41
- Device tag (0011) 222
- Device tag (1496) 137
- DHCP client (7212) 147
- Diagnostic event category (0738) 249
- Diagnostic event simulation (0737) 249
- Diagnostics (1482) 141
- Diagnostics 1 (0692) 215
- Diagnostics 2 (0693) 216
- Diagnostics 3 (0694) 217
- Diagnostics 4 (0695) 217
- Diagnostics 5 (0696) 218
- Diagnostics mask (1484) 142
- Direct access (0106) 11
- Display damping (0094) 24
- Display interval (0096) 23
- Display language (0104) 15

- ECC cleaning cycle (6557) 72
- ECC duration (6555) 72
- ECC Polarity (6631) 73
- ECC recovery time (6556) 72
- Electrode cleaning circuit (6528) 71
- Empty pipe adjust value (6527) 70
- Empty pipe detection (1860) 69
- ENP version (0012) 224
- Enter access code (0003) 13
- Entire logging duration (0861) 235
- Extended order code 1 (0023) 224
- Extended order code 2 (0021) 224
- Extended order code 3 (0022) 224
- External density (6630) 74
- External temperature (6673) 77
- Factory reset (1488) 143
- Fail safe time
 - Analog output 1 to n (1635–1 to n) 177
 - Discrete output 1 to n (1697–1 to n) 190
- Fail safe type
 - Analog input 1 to n (1525–1 to n) 157
 - Analog output 1 to n (1636–1 to n) 178
 - Discrete input 1 to n (2189–1 to n) 170
 - Discrete output 1 to n (1696–1 to n) 190
- Fail-safe value
 - Analog input 1 to n (1526–1 to n) 157
 - Analog output 1 to n (1637–1 to n) 178
 - Discrete input 1 to n (2190–1 to n) 171
 - Discrete output 1 to n (1693–1 to n) 191
- Failure current
 - Current output 1 to n (0352–1 to n) 106
- Failure frequency
 - Pulse/frequency/switch output 1 to n (0474–1 to n) 119
- Failure mode
 - Current input 1 to n (1601–1 to n) 91
 - Current output 1 to n (0364–1 to n) 105
 - Pulse/frequency/switch output 1 to n (0451–1 to n) 118
 - Pulse/frequency/switch output 1 to n (0480–1 to n) 113
 - Pulse/frequency/switch output 1 to n (0486–1 to n) 125
 - Relay output 1 to n (0811–1 to n) 131
 - Totalizer 1 to n (3810–1 to n) 202
- Failure value
 - Current input 1 to n (1602–1 to n) 91
- Feature enabled (1476) 145
- Feature supported (1477) 145
- Filter options 220
- Filter options (0705) 219
- Filter options (6710) 60
- Firmware version (0010) 223
- Fixed current
 - Current output 1 to n (0365–1 to n) 97
- Fixed density (6623) 74
- Flow damping (6661) 62
- Flow override (1839) 62
- Flow velocity (1854) 45
- Flow velocity factor (1880) 84
- Flow velocity offset (1879) 84
- Format display (0098) 15
- Frequency output simulation 1 to n (0472–1 to n) 245
- Frequency value 1 to n (0473–1 to n) 245
- Full pipe adjust value (6548) 70
- Gateway IP address (2719) 155
- Hardware lock (1499) 144
- Hardware revision (1479) 140
- Header (0097) 24
- Header text (0112) 25
- Hi alarm state
 - Analog input 1 to n (1538–1 to n) 166
 - Totalizer 1 to n (3811–1 to n) 210
- Hi alarm value
 - Analog input 1 to n (1539–1 to n) 166
 - Totalizer 1 to n (3812–1 to n) 210
- Hi Hi alarm state
 - Analog input 1 to n (1540–1 to n) 166
 - Totalizer 1 to n (3813–1 to n) 210
- Hi Hi alarm value
 - Analog input 1 to n (1541–1 to n) 166
 - Totalizer 1 to n (3814–1 to n) 210
- Hi Hi Lim
 - Analog input 1 to n (1528–1 to n) 164
 - Totalizer 1 to n (3815–1 to n) 208
- Hi Lim
 - Analog input 1 to n (1529–1 to n) 164
 - Totalizer 1 to n (3816–1 to n) 208
- I/O module 1 terminal numbers (3902–1) 227
- I/O module 1 to n information (3906–1 to n) 87
- I/O module 1 to n terminal numbers (3902–1 to n) 86
- I/O module 1 to n type (3901–1 to n) 87
- I/O module 2 terminal numbers
 - I/O module 2 (3902) 228
- Ident number selector (1461) 134, 144
- Increase close
 - Analog output 1 to n (1638–1 to n) 187
- Input channel
 - Analog output 1 to n (1670–1 to n) 185
 - Discrete output 1 to n (1724–1 to n) 196
- Input signal level (1356) 243
- Installation direction (1809) 78
- Integration time (6533) 78
- Invert
 - Discrete input 1 to n (2188–1 to n) 170
 - Discrete output 1 to n (1692–1 to n) 189
- Invert output signal
 - Pulse/frequency/switch output 1 to n (0470–1 to n) 126
- IP address (7209) 147
- IP address domain name server (2720) 155
- Last backup (2757) 27
- Lin type
 - Analog input 1 to n (1523–1 to n) 163
- Linear expansion coefficient (1817) 75

Lo alarm state		
Analog input 1 to n (1542-1 to n)	167	
Totalizer 1 to n (3817-1 to n)	211	
Lo alarm value		
Analog input 1 to n (1543-1 to n)	167	
Totalizer 1 to n (3818-1 to n)	211	
Lo Lim		
Analog input 1 to n (1530-1 to n)	165	
Totalizer 1 to n (3819-1 to n)	209	
Lo Lo alarm state		
Analog input 1 to n (1544-1 to n)	167	
Totalizer 1 to n (3820-1 to n)	211	
Lo Lo alarm value		
Analog input 1 to n (1545-1 to n)	167	
Totalizer 1 to n (3821-1 to n)	211	
Lo Lo Lim		
Analog input 1 to n (1531-1 to n)	165	
Totalizer 1 to n (3822-1 to n)	209	
Locking status (0004)	12	
Logging delay (0859)	234	
Logging interval (0856)	232	
Login page (7273)	149	
MAC address (7214)	147	
Manufacturer ID (1502)	141	
Mass flow (1847)	44	
Mass flow factor (1846)	81	
Mass flow offset (1841)	80	
Mass flow unit (0554)	57	
Mass unit (0574)	57	
Master availability (1517)	136	
Max. switch cycles number		
Relay output 1 to n (0817-1 to n)	53	
Maximum frequency value		
Pulse/frequency/switch output 1 to n (0454-1 to n)	115	
Maximum value (6545)	239	
Maximum value (6680)	240	
Measured current 1 to n (0366-1 to n)	50, 107	
Measured current 1 to n (1604-1 to n)	49	
Measured value EPD (6559)	71	
Measured values 1 to n (1603-1 to n)	48	
Measuring mode		
Current output 1 to n (0351-1 to n)	99	
Pulse/frequency/switch output 1 to n (0457-1 to n)	112	
Pulse/frequency/switch output 1 to n (0479-1 to n)	116	
Measuring period (6536)	79	
Measuring value at maximum frequency		
Pulse/frequency/switch output 1 to n (0475-1 to n)	116	
Measuring value at minimum frequency		
Pulse/frequency/switch output 1 to n (0476-1 to n)	115	
Minimum frequency value		
Pulse/frequency/switch output 1 to n (0453-1 to n)	115	
Minimum value (6547)	238	
Minimum value (6681)	239	
Mode block actual		
Analog input 1 to n (1521-1 to n)	160	
Analog output 1 to n (1631-1 to n)	181	
Discrete input 1 to n (2181-1 to n)	173	
Discrete output 1 to n (1691-1 to n)	193	
Totalizer 1 to n (3801-1 to n)	205	
Mode block actual (1472)	139	
Mode block normal		
Analog input 1 to n (1546-1 to n)	160	
Analog output 1 to n (1643-1 to n)	181	
Discrete input 1 to n (2192-1 to n)	173	
Discrete output 1 to n (1702-1 to n)	194	
Totalizer 1 to n (3824-1 to n)	205	
Mode block normal (1492)	139	
Mode block permitted		
Analog input 1 to n (1553-1 to n)	160	
Analog output 1 to n (1648-1 to n)	181	
Discrete input 1 to n (2195-1 to n)	173	
Discrete output 1 to n (1705-1 to n)	193	
Totalizer 1 to n (3828-1 to n)	205	
Mode block permitted (1493)	139	
Network security (2705)	151	
New adjustment (6560)	70	
Nominal diameter (2807)	85	
Off value low flow cutoff (1804)	66	
On value low flow cutoff (1805)	66	
Operating mode		
Pulse/frequency/switch output 1 to n (0469-1 to n)	109	
Operating time (0652)	27, 40, 214	
Operating time from restart (0653)	214	
Order code (0008)	223	
Out decimal point		
Analog input 1 to n (1547-1 to n)	163	
Out scale lower range		
Analog input 1 to n (1548-1 to n)	162	
Analog output 1 to n (1644-1 to n)	188	
Out scale upper range		
Analog input 1 to n (1551-1 to n)	163	
Analog output 1 to n (1646-1 to n)	188	
Out status		
Analog input 1 to n (1549-1 to n)	158	
Analog input 1 to n (1564-1 to n)	158	
Analog output 1 to n (1645-1 to n)	179	
Analog output 1 to n (1669-1 to n)	179	
Discrete input 1 to n (2193-1 to n)	171	
Discrete input 1 to n (2203-1 to n)	171	
Discrete output 1 to n (1703-1 to n)	191	
Discrete output 1 to n (1723-1 to n)	191	
Out unit		
Analog input 1 to n (1550-1 to n)	163	
Out unit text		
Analog input 1 to n (1532-1 to n)	169	
Out value		
Analog input 1 to n (1552-1 to n)	158	
Analog output 1 to n (1647-1 to n)	179	
Discrete input 1 to n (2194-1 to n)	171	
Discrete output 1 to n (1704-1 to n)	191	

- Output channel
 - Analog output 1 to n (1671–1 to n) 185
 - Discrete output 1 to n (1725–1 to n) 197
- Output current 1 to n (0361–1 to n) 50, 106
- Output frequency 1 to n (0471–1 to n) 51, 119
- Position status
 - Analog output 1 to n (1649–1 to n) 186
- Position value
 - Analog output 1 to n (1650–1 to n) 186
- Powerless relay status
 - Relay output 1 to n (0816–1 to n) 132
- Preset value 1 to n (3829–1 to n) 201
- Pressure shock suppression (1806) 67
- Previous diagnostics (0690) 213
- Process variable value (1811) 242
- PROFIBUS ident number (1464) 135
- Profile version (1463) 135
- Progress (6571) 70
- Pulse output 1 to n (0456–1 to n) 51, 114
- Pulse output simulation 1 to n (0458–1 to n) ... 246
- Pulse value 1 to n (0459–1 to n) 246
- Pulse width
 - Pulse/frequency/switch output 1 to n (0452–1 to n) 112
- PV filter time
 - Analog input 1 to n (1524–1 to n) 157
- PV scale lower range
 - Analog input 1 to n (1554–1 to n) 162
 - Analog output 1 to n (1651–1 to n) 183
- PV scale upper range
 - Analog input 1 to n (1555–1 to n) 162
 - Analog output 1 to n (1652–1 to n) 184
- RCAS in status
 - Analog output 1 to n (1654–1 to n) 185
 - Discrete output 1 to n (1706–1 to n) 196
- RCAS in value
 - Analog output 1 to n (1655–1 to n) 184
 - Discrete output 1 to n (1707–1 to n) 196
- RCAS out status
 - Analog output 1 to n (1656–1 to n) 186
 - Discrete output 1 to n (1708–1 to n) 197
- RCAS out value
 - Analog output 1 to n (1657–1 to n) 185
 - Discrete output 1 to n (1711–1 to n) 197
- Readback status
 - Analog output 1 to n (1658–1 to n) 184
 - Discrete output 1 to n (1712–1 to n) 196
- Readback value
 - Analog output 1 to n (1659–1 to n) 184
 - Discrete output 1 to n (1713–1 to n) 195
- Received signal strength (2721) 155
- Reference density (1885) 65
- Reference density (1892) 75
- Reference temperature (1816) 77
- Relay output 1 to n simulation (0802–1 to n) ... 247
- Relay output function
 - Relay output 1 to n (0804–1 to n) 127
- Reset access code (0024) 40
- Reset min/max values (6541) 238
- Response time
 - Current output 1 to n (0378–1 to n) 104
 - Pulse/frequency/switch output 1 to n (0491–1 to n) 118
- Response time empty pipe detection (1859) 69
- Response time status input
 - Status input 1 to n (1354–1 to n) 93
- Security identification (2718) 151
- Select antenna (2713) 154
- Separator (0101) 26
- Serial number (0009) 222
- Serial number (1481) 141
- Set point status
 - Analog output 1 to n (1660–1 to n) 177
 - Discrete output 1 to n (1714–1 to n) 189
- Set point value
 - Analog output 1 to n (1661–1 to n) 177
 - Discrete output 1 to n (1715–1 to n) 189
- Setpoint deviation
 - Analog output 1 to n (1653–1 to n) 186
- Signal mode
 - Current input 1 to n (1610–1 to n) 89
 - Current output 1 to n (0377–1 to n) 95
 - Pulse/frequency/switch output 1 to n (0490–1 to n) 109
- Simulate enabled
 - Analog input 1 to n (1556–1 to n) 168
 - Analog output 1 to n (1662–1 to n) 186
 - Discrete input 1 to n (2196–1 to n) 175
 - Discrete output 1 to n (1716–1 to n) 197
- Simulate status
 - Analog input 1 to n (1557–1 to n) 168
 - Analog output 1 to n (1663–1 to n) 187
 - Discrete input 1 to n (2197–1 to n) 176
 - Discrete output 1 to n (1717–1 to n) 198
- Simulate value
 - Analog input 1 to n (1558–1 to n) 168
 - Analog output 1 to n (1664–1 to n) 187
 - Discrete input 1 to n (2198–1 to n) 176
 - Discrete output 1 to n (1718–1 to n) 198
- Software option overview (0015) 42
- Software revision
 - I/O module (0072) 227, 228
- Software revision (0072) 225, 226, 229
- Software revision (1478) 140
- Square expansion coefficient (1818) 75
- SSID name (2707) 154
- SSID name (2714) 151
- Static revision
 - Analog input 1 to n (1560–1 to n) 159
 - Analog output 1 to n (1666–1 to n) 180
 - Discrete input 1 to n (2200–1 to n) 172
 - Discrete output 1 to n (1720–1 to n) 192
 - Totalizer 1 to n (3832–1 to n) 204
- Static revision (1495) 138
- Status input simulation (1355) 242
- Status PROFIBUS Master Config (1465) 135
- Strategy
 - Analog input 1 to n (1559–1 to n) 159

Analog output 1 to n (1665-1 to n)	180	Status input 1 to n (1358-1 to n)	92
Discrete input 1 to n (2199-1 to n)	172	Timestamp	213, 214, 215, 216, 217, 218, 219
Discrete output 1 to n (1719-1 to n)	192	Totalizer operation mode	
Totalizer 1 to n (3831-1 to n)	204	Totalizer 1 to n (3823-1 to n)	202
Strategy (1494)	138	Totalizer overflow 1 to n (0910-1 to n)	47
Subnet mask (7211)	148	Totalizer status (Hex) 1 to n (3825-1 to n)	203
Switch cycles		Totalizer status 1 to n (3826-1 to n)	203
Relay output 1 to n (0815-1 to n)	53	Totalizer value 1 to n (0911-1 to n)	47
Switch output function		Totalizer value 1 to n (3827-1 to n)	203
Pulse/frequency/switch output 1 to n (0481-1 to n)	119	Unit totalizer	
Switch output simulation 1 to n (0462-1 to n)	246	Totalizer 1 to n (3835-1 to n)	200
Switch point empty pipe detection (6562)	69	User name (2715)	152
Switch status		Value 1 display (0107)	18
Relay output 1 to n (0801-1 to n)	52, 132	Value 2 display (0108)	20
Switch status 1 to n (0461-1 to n)	52, 125	Value 3 display (0110)	21
Switch status 1 to n (0463-1 to n)	247	Value 4 display (0109)	22
Switch status 1 to n (0803-1 to n)	248	Value current input 1 to n (1609-1 to n)	244
Switch-off delay		Value current output 1 to n (0355-1 to n)	244
Pulse/frequency/switch output 1 to n (0465-1 to n)	125	Value per pulse	
Relay output 1 to n (0813-1 to n)	130	Pulse/frequency/switch output 1 to n (0455-1 to n)	111
Switch-off value		Value status input	
Pulse/frequency/switch output 1 to n (0464-1 to n)	123	Status input 1 to n (1353-1 to n)	93
Relay output 1 to n (0809-1 to n)	130	Value status input 1 to n (1353-1 to n)	49
Switch-on delay		Volume flow (1838)	44
Pulse/frequency/switch output 1 to n (0467-1 to n)	124	Volume flow factor (1832)	80
Relay output 1 to n (0814-1 to n)	131	Volume flow offset (1831)	80
Switch-on value		Volume flow unit (0553)	54
Pulse/frequency/switch output 1 to n (0466-1 to n)	123	Volume unit (0563)	55
Relay output 1 to n (0810-1 to n)	131	Web server functionality (7222)	148
Tag description		Web server language (7221)	146
Analog input 1 to n (1562-1 to n)	158	WLAN (2702)	150
Analog output 1 to n (1667-1 to n)	179	WLAN IP address (2711)	152
Discrete input 1 to n (2201-1 to n)	172	WLAN MAC address (2703)	152
Discrete output 1 to n (1721-1 to n)	192	WLAN mode (2717)	150
Totalizer 1 to n (3833-1 to n)	204	WLAN passphrase (2706)	153
Target mode		WLAN password (2716)	152
Analog input 1 to n (1563-1 to n)	159	WLAN subnet mask (2709)	153
Analog output 1 to n (1668-1 to n)	180	Zero point (6546)	85
Discrete input 1 to n (2202-1 to n)	173	Direct access (Parameter)	11
Discrete output 1 to n (1722-1 to n)	193	Discrete input 1 to n (Submenu)	169
Totalizer 1 to n (3834-1 to n)	205	Discrete inputs (Submenu)	169
Target mode (1497)	138	Discrete output 1 to n (Submenu)	188
Temperature (1852)	46	Discrete outputs (Submenu)	188
Temperature damping (1886)	64	Display (Submenu)	14
Temperature factor (1869)	83	Display channel 1 (Submenu)	235
Temperature offset (1868)	82	Display channel 2 (Submenu)	236
Temperature source (6712)	76	Display channel 3 (Submenu)	237
Temperature unit (0557)	56	Display channel 4 (Submenu)	237
Terminal number		Display damping (Parameter)	24
Current input 1 to n (1611-1 to n)	89	Display interval (Parameter)	23
Current output 1 to n (0379-1 to n)	95	Display language (Parameter)	15
Pulse/frequency/switch output 1 to n (0492-1 to n)	108	Display module (Submenu)	229
Relay output 1 to n (0812-1 to n)	127	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

E

ECC cleaning cycle (Parameter)	72
ECC duration (Parameter)	72
ECC Polarity (Parameter)	73
ECC recovery time (Parameter)	72
Electrode cleaning circuit (Parameter)	71
Electrode cleaning circuit (Submenu)	71
Empty pipe adjust value (Parameter)	70
Empty pipe detection (Parameter)	69
Empty pipe detection (Submenu)	68
ENP version (Parameter)	224
Enter access code (Parameter)	13
Entire logging duration (Parameter)	235
Event list (Submenu)	220
Event logbook (Submenu)	219
Extended order code 1 (Parameter)	224
Extended order code 2 (Parameter)	224
Extended order code 3 (Parameter)	224
External compensation (Submenu)	73
External density (Parameter)	74
External temperature (Parameter)	77

F

Factory reset (Parameter)	143
Factory settings	250
SI units	250
US units	252
Fail safe time (Parameter)	177, 190
Fail safe type (Parameter)	157, 170, 178, 190
Fail-safe value (Parameter)	157, 171, 178, 191
Failure current (Parameter)	106
Failure frequency (Parameter)	119
Failure mode (Parameter) 91, 105, 113, 118, 125, 131,	202
Failure value (Parameter)	91
Feature enabled (Parameter)	145
Feature supported (Parameter)	145
Filter options (Parameter)	60, 219, 220
Firmware version (Parameter)	223
Fixed current (Parameter)	97
Fixed density (Parameter)	74
Flow damping (Parameter)	62
Flow override (Parameter)	62
Flow velocity (Parameter)	45
Flow velocity factor (Parameter)	84
Flow velocity offset (Parameter)	84
Format display (Parameter)	15
Frequency output simulation 1 to n (Parameter)	245
Frequency value 1 to n (Parameter)	245
Full pipe adjust value (Parameter)	70
Function	
see Parameter	

G

Gateway IP address (Parameter)	155
--------------------------------------	-----

H

Hardware lock (Parameter)	144
Hardware revision (Parameter)	140
Header (Parameter)	24
Header text (Parameter)	25
Heartbeat (Submenu)	240
Hi alarm state (Parameter)	166, 210
Hi alarm value (Parameter)	166, 210
Hi Hi alarm state (Parameter)	166, 210
Hi Hi alarm value (Parameter)	166, 210
Hi Hi Lim (Parameter)	164, 208
Hi Lim (Parameter)	164, 208

I

I/O configuration (Submenu)	86
I/O module 1 (Submenu)	227
I/O module 1 terminal numbers (Parameter)	227
I/O module 1 to n information (Parameter)	87
I/O module 1 to n terminal numbers (Parameter)	86
I/O module 1 to n type (Parameter)	87
I/O module 2 (Submenu)	227
I/O module 2 terminal numbers (Parameter)	228
Ident number selector (Parameter)	134, 144
Increase close (Parameter)	187
Input (Submenu)	88
Input channel (Parameter)	185, 196
Input signal level (Parameter)	243
Input values (Submenu)	48
Installation direction (Parameter)	78
Integration time (Parameter)	78
Invert (Parameter)	170, 189
Invert output signal (Parameter)	126
IP address (Parameter)	147
IP address domain name server (Parameter)	155

L

Last backup (Parameter)	27
Lin type (Parameter)	163
Linear expansion coefficient (Parameter)	75
Lo alarm state (Parameter)	167, 211
Lo alarm value (Parameter)	167, 211
Lo Lim (Parameter)	165, 209
Lo Lo alarm state (Parameter)	167, 211
Lo Lo alarm value (Parameter)	167, 211
Lo Lo Lim (Parameter)	165, 209
Locking status (Parameter)	12
Logging delay (Parameter)	234
Logging interval (Parameter)	232
Login page (Parameter)	149
Low flow cut off (Submenu)	65

M

MAC address (Parameter)	147
Main electronic module + I/O module 1 (Submenu)	225
Main electronic temperature (Submenu)	238
Manufacturer ID (Parameter)	141
Mass flow (Parameter)	44
Mass flow factor (Parameter)	81
Mass flow offset (Parameter)	80

Mass flow unit (Parameter) 57
 Mass unit (Parameter) 57
 Master availability (Parameter) 136
 Max. switch cycles number (Parameter) 53
 Maximum frequency value (Parameter) 115
 Maximum value (Parameter) 239, 240
 Measured current 1 to n (Parameter) 49, 50, 107
 Measured value EPD (Parameter) 71
 Measured values (Submenu) 43
 Measured values 1 to n (Parameter) 48
 Measuring mode (Parameter) 99, 112, 116
 Measuring period (Parameter) 79
 Measuring value at maximum frequency (Parameter)
 116
 Measuring value at minimum frequency (Parameter)
 115
 Min/max values (Submenu) 237
 Minimum frequency value (Parameter) 115
 Minimum value (Parameter) 238, 239
 Mode block actual (Parameter) 139, 160, 173, 181,
 193, 205
 Mode block normal (Parameter) 139, 160, 173, 181,
 194, 205
 Mode block permitted (Parameter) 139, 160, 173,
 181, 193, 205

N
 Network security (Parameter) 151
 New adjustment (Parameter) 70
 Nominal diameter (Parameter) 85

O
 Off value low flow cutoff (Parameter) 66
 On value low flow cutoff (Parameter) 66
 Operating mode (Parameter) 109
 Operating time (Parameter) 27, 40, 214
 Operating time from restart (Parameter) 214
 Order code (Parameter) 223
 Out decimal point (Parameter) 163
 Out scale lower range (Parameter) 162, 188
 Out scale upper range (Parameter) 163, 188
 Out status (Parameter) 158, 171, 179, 191
 Out unit (Parameter) 163
 Out unit text (Parameter) 169
 Out value (Parameter) 158, 171, 179, 191
 Output (Submenu) 94
 Output channel (Parameter) 185, 197
 Output current 1 to n (Parameter) 50, 106
 Output frequency 1 to n (Parameter) 51, 119
 Output values (Submenu) 49

P
 Parameter
 Structure of a parameter description 6
 Physical block (Submenu) 136
 Position status (Parameter) 186
 Position value (Parameter) 186
 Powerless relay status (Parameter) 132
 Preset value 1 to n (Parameter) 201

Pressure shock suppression (Parameter) 67
 Previous diagnostics (Parameter) 213
 Process parameters (Submenu) 60
 Process variable adjustment (Submenu) 79
 Process variable value (Parameter) 242
 Process variables (Submenu) 44
 PROFIBUS ident number (Parameter) 135
 PROFIBUS PA configuration (Submenu) 133
 PROFIBUS PA info (Submenu) 135
 Profile version (Parameter) 135
 Progress (Parameter) 70
 Pulse output 1 to n (Parameter) 51, 114
 Pulse output simulation 1 to n (Parameter) 246
 Pulse value 1 to n (Parameter) 246
 Pulse width (Parameter) 112
 Pulse/frequency/switch output 1 to n (Submenu) 50,
 107
 PV filter time (Parameter) 157
 PV scale lower range (Parameter) 162, 183
 PV scale upper range (Parameter) 162, 184

R

RCAS in status (Parameter) 185, 196
 RCAS in value (Parameter) 184, 196
 RCAS out status (Parameter) 186, 197
 RCAS out value (Parameter) 185, 197
 Readback status (Parameter) 184, 196
 Readback value (Parameter) 184, 195
 Received signal strength (Parameter) 155
 Reference density (Parameter) 65, 75
 Reference temperature (Parameter) 77
 Relay output 1 to n (Submenu) 52, 126
 Relay output 1 to n simulation (Parameter) 247
 Relay output function (Parameter) 127
 Reset access code (Parameter) 40
 Reset access code (Submenu) 40
 Reset min/max values (Parameter) 238
 Response time (Parameter) 104, 118
 Response time empty pipe detection (Parameter) 69
 Response time status input (Parameter) 93

S

Security identification (Parameter) 151
 Select antenna (Parameter) 154
 Sensor (Submenu) 43
 Sensor adjustment (Submenu) 78
 Sensor electronic module (ISEM) (Submenu) 226
 Separator (Parameter) 26
 Serial number (Parameter) 141, 222
 Set point status (Parameter) 177, 189
 Set point value (Parameter) 177, 189
 Setpoint deviation (Parameter) 186
 Signal mode (Parameter) 89, 95, 109
 Simulate enabled (Parameter) 168, 175, 186, 197
 Simulate status (Parameter) 168, 176, 187, 198
 Simulate value (Parameter) 168, 176, 187, 198
 Simulation (Submenu) 240
 Software option overview (Parameter) 42

Software revision (Parameter)	140, 225, 226, 227, 228,	229
Square expansion coefficient (Parameter)	75	
SSID name (Parameter)	151, 154	
Static revision (Parameter)	138, 159, 172, 180, 192,	204
Status input 1 to n (Submenu)	92	
Status input simulation (Parameter)	242	
Status PROFIBUS Master Config (Parameter)	135	
Strategy (Parameter)	138, 159, 172, 180, 192,	204
Submenu		
Administration	38	
Analog input 1 to n	156	
Analog inputs	156	
Analog output 1 to n	176	
Analog outputs	176	
Application	198	
Calibration	85	
Communication	133	
Configuration backup	27	
Current input 1 to n	48, 88	
Current output 1 to n	94	
Data logging	230	
Device information	221	
Diagnostic behavior	30	
Diagnostic handling	30	
Diagnostic list	215	
Diagnostics	212	
Discrete input 1 to n	169	
Discrete inputs	169	
Discrete output 1 to n	188	
Discrete outputs	188	
Display	14	
Display channel 1	235	
Display channel 2	236	
Display channel 3	237	
Display channel 4	237	
Display module	229	
Electrode cleaning circuit	71	
Empty pipe detection	68	
Event list	220	
Event logbook	219	
External compensation	73	
Heartbeat	240	
I/O configuration	86	
I/O module 1	227	
I/O module 2	227	
Input	88	
Input values	48	
Low flow cut off	65	
Main electronic module + I/O module 1	225	
Main electronic temperature	238	
Measured values	43	
Min/max values	237	
Output	94	
Output values	49	
Physical block	136	
Process parameters	60	
Process variable adjustment	79	

Process variables	44
PROFIBUS PA configuration	133
PROFIBUS PA info	135
Pulse/frequency/switch output 1 to n	50, 107
Relay output 1 to n	52, 126
Reset access code	40
Sensor	43
Sensor adjustment	78
Sensor electronic module (ISEM)	226
Simulation	240
Status input 1 to n	92
System	13
System units	53
Temperature	239
Totalizer	46
Totalizer 1 to n	199
Value current output 1 to n	50
Value status input 1 to n	49
Web server	146
WLAN settings	149
Subnet mask (Parameter)	148
Switch cycles (Parameter)	53
Switch output function (Parameter)	119
Switch output simulation 1 to n (Parameter)	246
Switch point empty pipe detection (Parameter)	69
Switch status (Parameter)	52, 132
Switch status 1 to n (Parameter)	52, 125, 247, 248
Switch-off delay (Parameter)	125, 130
Switch-off value (Parameter)	123, 130
Switch-on delay (Parameter)	124, 131
Switch-on value (Parameter)	123, 131
System (Submenu)	13
System units (Submenu)	53

T

Tag description (Parameter)	158, 172, 179, 192, 204
Target group	4
Target mode (Parameter)	138, 159, 173, 180, 193, 205
Temperature (Parameter)	46
Temperature (Submenu)	239
Temperature damping (Parameter)	64
Temperature factor (Parameter)	83
Temperature offset (Parameter)	82
Temperature source (Parameter)	76
Temperature unit (Parameter)	56
Terminal number (Parameter)	89, 92, 95, 108, 127
Timestamp (Parameter)	213, 214, 215, 216, 217, 218,
	219
Totalizer (Submenu)	46
Totalizer 1 to n (Submenu)	199
Totalizer operation mode (Parameter)	202
Totalizer overflow 1 to n (Parameter)	47
Totalizer status (Hex) 1 to n (Parameter)	203
Totalizer status 1 to n (Parameter)	203
Totalizer value 1 to n (Parameter)	47, 203

U

Unit totalizer (Parameter)	200
User name (Parameter)	152

V

Value 1 display (Parameter)	18
Value 2 display (Parameter)	20
Value 3 display (Parameter)	21
Value 4 display (Parameter)	22
Value current input 1 to n (Parameter)	244
Value current output 1 to n (Parameter)	244
Value current output 1 to n (Submenu)	50
Value per pulse (Parameter)	111
Value status input (Parameter)	49, 93
Value status input 1 to n (Submenu)	49
Volume flow (Parameter)	44
Volume flow factor (Parameter)	80
Volume flow offset (Parameter)	80
Volume flow unit (Parameter)	54
Volume unit (Parameter)	55

W

Web server (Submenu)	146
Web server functionality (Parameter)	148
Web server language (Parameter)	146
Wizard	
Define access code	38
WLAN (Parameter)	150
WLAN IP address (Parameter)	152
WLAN MAC address (Parameter)	152
WLAN mode (Parameter)	150
WLAN passphrase (Parameter)	153
WLAN password (Parameter)	152
WLAN settings (Submenu)	149
WLAN subnet mask (Parameter)	153

Z

Zero point (Parameter)	85
----------------------------------	----

www.addresses.endress.com
